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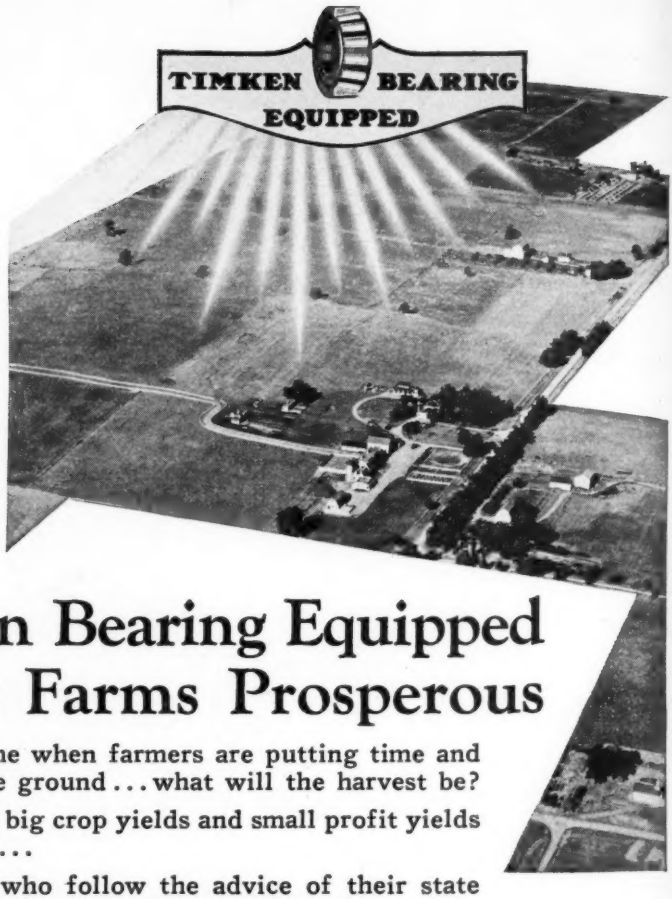

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The Whole Truth—Not Selected Truth

R. H. STINCHFIELD, *Managing Editor* SID NOBLE, *Editor*

Editorial Offices: 19 West 44th Street, New York

VOLUME XIV NUMBER SIX

TABLE OF CONTENTS, JUNE, 1930

A Summer Idle 3
Jeff Wonders If He Is Different

Healthy Cotton 5
A Crop Story, by E. B. Ferris

Rotating Chickens 7
Some Poultry Ideas, by W. E. McBath

Since Colonial Days 10
A Soil Improvement Story, by George F. Johnson

The Inquiring Mind and the Seeing Eye 14
The Second of Dr. A. S. Alexander's Series

What's Happening? 17
A Story of Changing Agriculture, by F. H. Jeter

Asparagus 20
A Story of Big Yields, by A. E. Wilkinson

A New Palace of Agriculture 21
Described by U. V. Wilcox

A Bright Idea 23
A Home-made Invention, reported by R. W. Donaldson

Four-year Soil Improvement Project 24
An Idea for Farm Boys, by Rensselaer Sill

Umm—Good Melon! 27
A Story of Quality, by E. R. Lancashire

Fertilizing Good Alfalfa Land 30
By S. D. Conner and R. R. Mulvey

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VACATION DAYS

Better Crops with PLANT FOOD

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"Am I different?"

A Summer Idle

By Jeff McDermid

OUR daylight-saving coterie, homeward bound on the suburban jitney, are of somewhat divided opinion as to the spending of the daylight we have saved. We likewise nurse opposing notions as to the meaning of "re-creation" as applied to forthcoming vacations.

In short, I find myself a minority shorn of listeners, for my futile observations about patching garden hose and the merits of lead arsenate and other concoctions to control codling moth are washed out under a torrent of tee-talk about fairways, putts, mid-irons, and mashies. Some of them seem to think I prefer the hoe to the golf stick because there is no substantial entrance fee to amateur garden clubs, or because overalls are cheaper than knickers. Others no doubt pity me for busting sod with a spade instead of doing it their way. But at least I don't need a caddy to point out the holes I have ripped up in the sward of bent grass and fescue. My strength is saved for solo efforts in devastating quack and sand-burs.

What I abhorred in my youth has become a doting pastime for me in the middle years. My change of front toward practical outdoor labor, since those summers of some time ago, sets me thinking, surrounded as I am by normal men who seem *not* to have outgrown their boyhood's pet aver-

sion. Are they different, or am I? Am I goofey in a suburb of wise ones? Must one be careful how he works up a sweat lest he lose caste along with his calories? Apparently, the plea for a higher standard of living, as many of us in America regard it, is a flare for more leisure in which to do nothing and do it well. The ability to do nothing with a high rating of achievement signifies the *sine qua non* of contentment in many of the cliques where I don't seem to click. Let's think along; maybe it's my fault, not theirs.

BUT when I was a lad the adult members of our village society had not reached quite that stage in their yearning ambitions for standards of living. Many families kept their brindle cows and there were carriage horses, too, by means of which the manure piles in the alleys easily kept pace with the needs of the gardens. Hens had to be fed, eggs to be gathered, and wood boxes filled; lawns had to be clipped, hedges trimmed, and plank sidewalks nailed down. We were a busy lot in those days before flat houses or flat tires.

The be-whiskered seniors of those Free Silver and Gold Standard days may have hated work as hard as we juniors, but they couldn't afford to acknowledge it. To boast of being unoccupied was *declasse*. There was no openly organized form of adult recreation outside of the saloon and the American Order of United Workmen. The former showed red noses daily and the latter displayed red fire on the Fourth. I suspect that the absolute zenith of their soul's complex for higher personal liberty consisted of a silent souse. Those who bore in their hearts certain Calvinistic horrors of booze were probably the fathers most responsible for those tremendous gardens and wide-spreading lawns. They had to have some vent for their superfluous energy before the days of motoring and "pill pasting in cow pastures."

So those Good Templars and Free Soilers undertook the management of as much arable land and livestock as the village board tolerated—with the small boy of the family as "caddy." It was in just such arboreal surroundings that the universal enmity for domestic toil seized grim hold upon so large a portion of our citizens who now close their desks at three o'clock in June.

We are obliged to get the psychology of the small boy toward his play hours before we go any further. He considered the rake and the wheelbarrow bothersome obstacles to the performance of things which his boy world deemed paramount. The drama of his imaginary realm of frolic, shared with his playfellows, was as real and as urgent to him as the fussy obligations that his father hurried off to meet each morning. So the small boy's play was (and still is) identical with the grown man's duties.

It still remains of equal value and perhaps of equal virtue—providing the boy's play is wholesome and providing that the grown-up loves his work. No sire caught in the meshes of a detested occupation can for a moment claim kindred spirit with the ecstasy of his boy, whose play is his work.

HENCE we see that what some folks would spell "idle" is really spelled "idyl." To be idle in the boy's way of yore is merely drifting into the state of mind for which summer and cloud shadows and rainbows and birdsongs were created. Every doer is first and last a dreamer. He is an idealist and an idyl lover—not an idler. He is a perpetual boy, curious and eager and naive.

Theocritus and Tennyson have put their idyls in immortal form, but the small boy now grown up must ever cherish his own idyls and carry them with him as he goes forth to claim

(*Turn to page* 62)

This picture, showing the influence of potash in the control of cotton wilt, was taken on the plantation of J. N. Parker, Dyersburg, Tennessee. The demonstration was conducted on land typical of vast bodies that lie just above the flood plain of the Mississippi river. Both wilt and rust are prevalent, and the picture illustrates the control of both. Where there was no potash, practically all the cotton died before the end of the season. With 100 pounds of muriate of potash, the rust was entirely controlled and the wilt largely controlled. The final yields from the differently fertilized plots were: 600 lbs. 6-8-0, 561 lbs. seed cotton per acre; 600 lbs. 6-8-4, 867 lbs. seed cotton per acre; and 600 lbs. 6-8-8, 1,308 lbs. of seed cotton per acre.

Healthy Cotton

By E. B. Ferris

Jackson, Mississippi

THE States of the Southwest are younger agriculturally than those of the Southeast. As a consequence, they have been later in reaching a point of soil exhaustion where the use of fertilizers is imperative. Statistics show that in 1928 the six States of the Southeast from Alabama eastward used about five times as much fertilizer as the six States of the Southwest from Mississippi westward, although one State of the latter group, Texas, is as large or larger than any three of the States of the Southeast.

However, the rate of increase in fertilizer consumption in the Southwest in recent years has been much higher than in the Southeast. As an illustration, North Carolina doubled her fertilizer consumption between 1921 and 1928, while Mississippi increased hers five-fold and Texas sevenfold in the same time.

Naturally, with the rapid increase in fertilizer consumption in the Southwest, the tendency has been to use single plant foods or combinations of two or more of these that lack the proper balance. Since the extension of the use of fertilizers has usually pre-

ceded any definite information as to the real needs of the soils, it has been only natural that the plant foods that show the greatest tendency to increase size of plant growth, regardless of quality or real fruiting ability, or that have had the greatest pressure brought to bear in the way of salesmanship, have been the first to be introduced and used.

Thus, it will be seen that in much of this newer fertilizer territory, nitrogen and phosphorus carriers are being used out of all proportion to the potash. In more than one West Tennessee county, the writer found the Farm Bureaus selling materials about in this proportion: 400 tons nitrate of soda, 800 tons superphosphate, 200 tons mixed fertilizer, and less than 10 tons of muriate or other potash carriers. In one of these counties a demonstration conducted by the writer had shown an increase of 390 pounds of seed cotton per acre as a result of adding potash to nitrogen and phosphorus, while this Tennessee county is joined on the south by Marshall county, Mississippi, in which is located the Holly Springs Experiment Station on practically the same soil type. This station published in 1929 the average results of five years' work where potash was added in varying amounts to uniform quantities of nitrate of soda and superphosphate. They have just reported these results, giving increased value of seed cotton per acre over the cost of the fertilizer and above the unfertilized plots as follows:

600 lbs. 4-8-0	$ 2.97
600 lbs. 4-8-2	14.23
600 lbs. 4-8-4	26.54
600 lbs. 4-8-6	29.76
600 lbs. 4-8-8	35.42

The Mississippi Experiment Stations have shown that in beginning the use fertilizers, no very great differences resulted from leaving potash out of fertilizer mixtures for a few years, and for a time such stations advised that Mississippi soils contained enough potash to meet the demands of crops. However, as the work was continued, marked differences in yield became apparent, and later this lack of potash manifested itself in the appearance of rust, wilt, and leaf diseases generally, often to such an extent as to make the growing of cotton entirely unprofitable.

Thus, for a time this same Holly Springs Station told the farmers of North Mississippi that they did not need potash. Their present recommendations with reference to potash as contained in their latest 1929 report are as follows: "The cotton farmers of this section should use 600

(*Turn to page* 58)

Companion pictures taken at the Raymond Experiment Station, Mississippi, in 1929, showing the effects of adding potash to nitrogen and phosphoric acid. The final yields of these two plots as given by Director H. F. Wallace were 686 lbs. of seed cotton per acre from the 4-8-0 and 1,122 lbs. from the 4-8-8.

Rotating Chickens

By Walker E. McBath

United States
Department of
Agriculture

¶ *Many county agents and teachers may find in the following story ideas and answers to inquiries on small flock management.*

YOU may have tried various methods of chicken management on a small place, but "the best is yet to come" if you have not tried rotating the chicken with the garden crops.

For the chickens on the farm there usually is abundant range; and proper range provisions generally are made in the large hennery. But the chickens kept on the small lot and raised to supply eggs and meat for the family often have this necessary playground taken from them, or sorely limited for the sake of the garden.

This cramping of the chicken yard, however, is unnecessary, and both the chickens and the garden will profit if, in the planning of their allotted portions of the back lot, the fence lines are not drawn too hard and fast. The principle of crop rotation is well accepted, and the small poultryman who is planning the lay-out of his back yard will do well to consider the advantages of including his chicken range in his rotation, just as if it were a crop.

Before building your next chicken house on a lot of the ordinary small town or suburban size, study the arrangement shown for a combined chicken and garden lay-out, adapted here to the last 40 feet of a lot 50 feet wide.

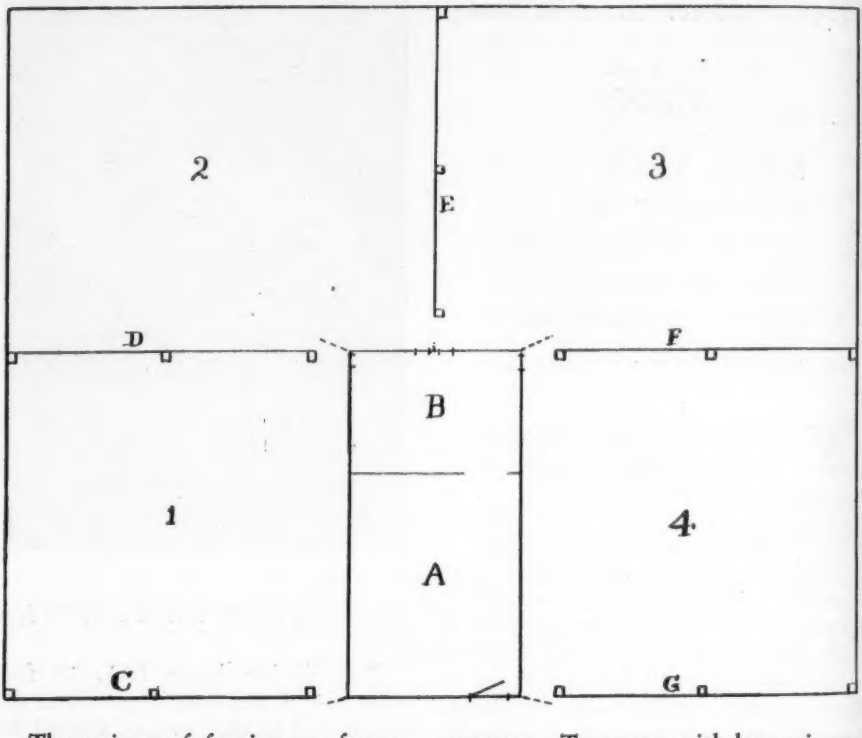
The chicken house (A), 10 feet wide and 20 feet long, is placed in the center and to the front of this 40 by 50-foot space. It has a covered scratch shed (B) at the rear which is included in the dimensions of the house. It will be seen that the surrounding ground is laid off into four sections. The outer border of this, except at the front, is permanently fenced, as in every back yard, but the lines C, D, E, F, and G are merely laid off and posts set as indicated.

For the fencing of the chicken run, provide two lengths of chicken wire, 18 feet long and of a height depending on the type of fowl to be raised. Fasten a narrow board at each end of each length. Through these end boards bore holes near the top and bottom for ⅜ inch bolts. The holes in all four end boards should be spaced exactly the same distance apart and the

same distance from the bottom of the wire. To be sure of this, lay the first board drilled on top of the others and bore down through each, one at a time.

tions, these can be partially embedded in the earth and the lower edge of the wire lightly stapled to them.

Between each fence section and the chicken house there is left a 2-foot



These pieces of fencing are for use in any of the 18-foot spaces on the lines C, D, E, F and G. In the posts that mark the ends of these lines, holes, similarly spaced to those in the end boards of the fence lengths, should be bored. It will be evident, then, that by the use of eight bolts these lengths can be quickly attached across any two of these partition lines. It also will be evident that to have these lengths of fence interchangeable so that they will stretch tightly across any of the spaces, the posts must all be exactly spaced and bored. When attaching these lengths to the posts, let the wire be between the end board and the post.

The wire is then lightly fastened with staples to the posts in the center of each line. If it is necessary to provide bottom boards for the fence sec-

gateway. Two gates with loose-pin or lift-off hinges, equally spaced, are to be made to hang in any of these five openings. Butts are permanently attached to the chicken-house wall to engage the corresponding butts on the gates, and a strong wire is fastened over the gateway from the house to the post to take the strain of the fence.

With these fence sections and the necessary posts ready, the scheme is apparent. Any one section, or any two or more sections of the plot can be fenced in for the chickens at will, while the rest is in garden use. It will be noted that in the plan the small chicken doors into the house are indicated in the corners of the four sections. It is well known that whenever there is occasion to herd the flock into the house the corner of the lot is

the place for the hole.

Starting with the preplanting period, which includes the winter, the two fence sections and gates are attached on the lines C and G, and the chickens have the entire lot at their disposal. This can be spaded, or plowed if you are applying it to a larger lot, and the chickens will not only enjoy the freshly turned earth but will clear it of cutworms and other grubs, and of all hibernating insects that have not gone too deeply into the soil.

As soon as it is time to do the earliest planting, move the one section of fence back from C to D and plant the part of the garden now taken from the chickens. If this is to be put into early maturing vegetables with the intention of using it for a second planting, it will be found an advantage to have all of it planted to vegetables that will be out of the way at about the same time. As more planting is to be done, move the fence around from D to E, and then lastly to F, thus confining the chickens to section No. 4.

Before replanting No. 1 bring the fences to the lines C and D, and let the chickens have the left-overs of the old crop and any insects that have moved in in the meantime. When ready to replant this space, it may be that some of the other sections are at the point where the chickens can have the run of the rows with little likelihood of damage by them. I have found that the taller varieties of garden corn make a delightful shade for the chickens after the stalks have grown too high for the fowls to injure the plants. This will leave section 4 free for planting to a late garden crop as soon as the chickens are moved to the first section. With this in mind plan to have all of either section 2 or 3 in something that the chickens can share at that time.

At any rate, only one space need be left at a time for the chickens. As that can be changed from time to time during the growing season, the birds will not mind the restricted space so much when they are given the pleasure of "hogging" off" the crop remnants as soon as the vegetables in any section of the garden have been harvested.

As the season gets late and a section that will not be used again for garden truck becomes vacant, plant it to rye or oats. This can be left for the winter use of the chickens until they have dug it all out. Of course permanent beds, such as strawberries or asparagus, will have to be laid off in front of this 40 by 50-foot plot. For the next spring, begin the planting with section No. 4 and work around the other way.

There are a number of variations in the rotation that may be worked into this simple scheme, these depending on the kind of vegetables planted and the ingenuity of the gardener in selecting his planting scheme in advance. With any plan, however, the advantages are evident. The sections will be periodically cleared of insects and weed seeds, and will get the benefit of the droppings of the hens. The chickens will have a wider range, and fresh, uncontaminated soil every so often, green food with every new shift of the fences, and a better chance at the insects. The owner will realize that he has taken a forward step out of the common rut of chicken management that leaves the chicken yard in one place year after year, and will be getting eggs from contented hens.

Since the Colonial

By George F. Johnson

Editor, Pennsylvania Department of Agriculture

IF farmers in the American colonies had adopted a definite soil improvement policy before 1750, the Revolutionary War might not have been fought in the eighteenth century!

The Boston Tea Party was as much the manifestation of a great economic and agricultural depression which engulfed the colonies, as a revolt against taxation without representation. The depression grew primarily out of the impoverishment of agricultural land. For 100 years or more, the fertile land in the colonies had been forced to the limit in the production of grain crops, tobacco, and cotton, which were largely exported. So long as the land would yield 30 to 40 bushels of wheat per acre and other crops accordingly, the colonies were able to maintain a most favorable balance of trade. Land values increased and there was prosperity generally. Paying a tax on tea and other imports under such conditions would not have been a hardship. But soil impoverishment combined with increasing local demands for farm products resulted in an unfavorable balance of trade and most unsatisfactory economic conditions. Paying a tax on tea and other imports under such circumstances became intolerable.

By the time of the Revolutionary War, agricultural conditions in the colonies had become so decidedly unsatisfactory that progressive farmers in Pennsylvania and probably other colonies began to give serious consideration to soil improvement. One agricultural leader of the time describes the turning point as follows: "The use of lime and gypsum as fertilizer of the ground, the introduction of clover, and the rotation of crops con-

A typical Pennsylvania valley where maintenance of soil fertility means a prosperous agriculture.

Days

A Review of Soil Improvement in Pennsylvania

Good Holsteins on good legume pasture.

stituted the happy causes which gave the first grand impulse to the agricultural prosperity of modern Pennsylvania."

It is now almost 160 years since Judge Richard Peters applied a bushel of gypsum to the soil on one of his farms in the vicinity of Philadelphia. This jurist and farm owner, whom George Washington described as one of the best practical farmers in Pennsylvania, might well be termed the father of chemical fertilization in America.

The Discovery of Gypsum

The real story of gypsum—the forerunner of modern soil fertilization—makes an interesting chapter in the early history of American agriculture. The story is told by Robert Vaux, a progressive land owner who prepared an essay on the subject and delivered it before the Philadelphia Society for Promoting Agriculture in January, 1825.

The value of gypsum as a fertilizer was accidently discovered in Germany. The story is told that a laborer who had been employed in mixing stucco mortar passed and re-passed from his work to his cottage across a field of worn-out soil. The succeeding season, his path threw up a luxuriant crop of grass which he attributed to the gypsum that fell from his clothes. He was induced to make an experiment near his dwelling with the remainder of the article in his possession. The effect astonished everybody and the cottager received a reward from his landlord for divulging his secret.

In 1770, Judge Peters became acquainted with gypsum, a small quantity of which had been sent from Germany to a merchant in Philadelphia with some information on its value as a manure. Judge Peters began his experiment with a single bushel of gypsum obtained from the maker of stucco ornaments in Philadelphia. Not long afterward, about 20 tons of this valuable material came to Philadelphia as ballast in a ship from London. The captain had no idea of its value as fertilizer and it was dumped near a wharf in Philadelphia.

Judge Peter's efforts in getting other farmers to use gypsum were at first limited and very discouraging. He finally triumphed over the combined forces of ignorance, prejudice, and ridicule and the practice became quite common in the vicinity of Philadelphia.

About the time that gypsum was first brought to America, a small quantity of red clover seed also reached Pennsylvania and was sown in gardens and on pastures in the neighborhood of Philadelphia. One of the early

advocates of growing clover was James Vaux of Montgomery county, Pennsylvania. He had planned some extensive experiments about the time the Revolutionary War broke out and consequently, these had to be delayed. However, in 1785, he sowed 80 pounds of clover seed on 35 acres of green wheat. His success with the clover prompted him to ask the Philadelphia Agricultural Society to recommend to the Legislature a bounty on the growing of clover seed. At this time, he said: "I will boldly assert it will prove of more benefit to agriculture in the present state of our country than anything that can be done. Reduce the price of clover seed and instead of the bare fields daily washing away, you will see them covered with grass and cattle."

Improvement Begins

The beginning of better agriculture in the East was found principally in the neighborhood of the three largest towns—Boston, New York, and Philadelphia. Gypsum, clover, and barnyard manure were extensively used and the worn-out soil responded to the treatment. The historical records indicate that the first gypsum worked miracles with the soil but it was soon discovered that the effects were greatly diminished by repeated applications.

Lime, which superseded gypsum, began to be used on land in Lancaster county about 1820. However, it was about 10 years before the favorable, good effects secured by the leading farmers convinced others that lime was a good investment. The effects of lime were most noticeable on light, sour, or worn-out lands. It is said that much land of this type was actually reclaimed with lime since it provided the starting point for red clover. At first the limestone was hauled from the quarry to the farm and burnt, but later the quarry owner burnt the stone and delivered it to the farm.

The next step in the fertilization of soil in Pennsylvania was the introduction of guano about 1840. Between 1840 and 1860 it was quite extensively used but was later replaced by bonedust and finally by phosphates. One of the interesting sidelights in the history of soil improvement is the fact that the value of animal bones as fertilizer was first appreciated in Europe and for a time bones were collected and exported from the United States. Gouverneur Emerson, speaking before the Philadelphia State Agricultural Society in 1854, said: "Comparatively few persons are aware that such a thing as a bone trade exists in our country, and fewer still that it is carried on to such a great extent. I have known a single vessel to leave Philadelphia for England with not less than 700 tons of bones on board, enough to give a good dressing to 5,000 or 6,000 acres of our suffering farm lands, if converted into the superphosphates. Should others of our commercial cities contribute in like proportion, the aggregate amount of the precious phosphates annually sent out of our country, in which they literally constituted the fatness of the land, must, indeed, be immense."

Mixed Fertilizers Appear

Between 1850 and 1880, acid and rock phosphates began to be widely used in Pennsylvania and during the same period specially mixed fertilizers made their appearance. The sale of these mixed fertilizers by unscrupulous merchants did much to delay the general use of commercial fertilizers by farmers in Pennsylvania. Thousands of tons of fertilizer material were sold in Pennsylvania at prices far in excess of the actual value of the product. For example, a fertilizer was sold about 1880 for $15 a ton which had an actual commercial value of only 15 cents. Of course, there was the other extreme also. Fertilizers having a value as high as $74 were selling for $68 per ton. In most cases, however, the fertilizers sold during the period centering around 1880 were over-priced and in many cases, were an outright fraud.

This condition led to the passage of the Pennsylvania Fertilizer Law in 1879. This law has been amended various times since that date so that today Pennsylvania is rigidly enforcing a law which requires all fertilizers to be registered and all fertilizers to contain at least 14 per cent of total units of plant food. The result of this law and the splendid cooperation of fertilizer manufacturers has been that fewer brands but higher grades of fertilizer are being sold to farmers in Pennsylvania. Approximately 100 fewer brands of fertilizer have been registered with the Bureau of Foods and Chemistry for sale during the past few years than were registered during 1925.

Spring planting closely follows seedbed preparation on this Pennsylvania farm.

Use Higher Analyses

The amendment to the Fertilizer Law prohibiting the sale of low grade fertilizer became effective January 1, 1926. While fewer brands are being sold, the quality of fertilizer is much higher, Dr. James W. Kellogg, Director of the Bureau, explains. The total tonnage of fertilizer sold in 1925 was 328,462; in 1926, 328,904; and 1927, 326,514. The total plant food (nitrogen, phosphoric acid, and potash) contained in these fertilizers was estimated at 52,520 tons in 1925; 55,402 in 1926; and 80,801 in 1927. Thus, farmers secured 28,281 tons more plant food in 1927 than in 1925 with an actual purchase of 1,948 tons less fertilizer.

The results of the 1928 inspection compared with that of the preceding year show continued improvement in guarantees for the plant food supplied. The average composition of each class was slightly higher than the average estimated for 1927, showing a tendency to increase the plant food units and to sell higher grade materials.

The accompanying table shows the trend in the use of fertilizer on Pennsylvania land during the period from 1879 to 1919. It will be noted that the tonnage used has increased fourfold and that the estimated amount used per acre of principal field crops has increased from 27 pounds in 1879 to 104 pounds in 1919. During the same period, the weighted index of productivity of acreage in principal field crops has increased 19 per cent.

An increase in the total production of the more important field crops in Pennsylvania accompanied by an actual decrease or only a slight increase in the area growing these crops has been one of the outstanding features in the progress of farming in this commonwealth during recent decades.

Increased Production

Between 1884 and 1924 the annual production of corn was increased 18,000,000 bushels while the area growing the crop was increased only 170,000 acres. Wheat is even a better illustration of the trend. An increase of 2,000,000 bushels of wheat in total

(*Turn to page* 60)

The Inquiring Mind *and the* Seeing Eye

By Dr. A. S. Alexander

University of Wisconsin

AN ancient writer once said: "On their own merits modest men are dumb".

That, surely, is wonderfully well borne out by our esteemed friend, Dr. Stephen Moulton Babcock.

He was born at Bridgewater, New York, away back in 1843, yet, despite his ripe old age, he is still actively searching, searching, searching into the mysteries of science.

What the simple, jovial, unassuming old savant is after now, nobody seems to know; nor does this Dean of the research workers say. Maybe, he doesn't quite know himself! That, I fancy is true; but his work certainly has to do with the discovery and understanding of the ultimate divisible particles of matter and the chemical theory that atoms are congeries of electrons in rapid orbital motion.

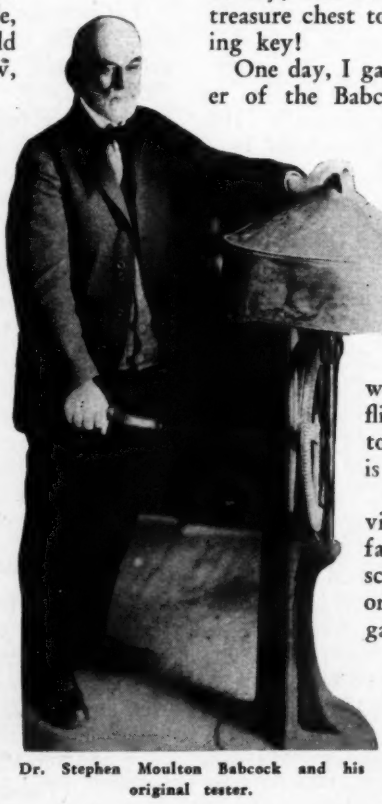
On a table in his office lies a slab of bitumen into which a weight gradually is sinking. Will the weight in time disappear; and, if so, why?

Near-by is another weight, suspended by a spiral wire and, inadvertently, the good Doctor gives it a glance each morning on arrival at his office. How much will that old wire stretch? Does it stretch? When will the weight fall?

"The inquiring mind and the seeing eye" never rest. Always there is the unquenchable urge to find out things, to know more, to make some new discovery; and ever there is some new treasure chest to unlock—and a missing key!

One day, I gave the great discoverer of the Babcock butterfat test a little problem to solve and expected to hear in return a profoundly learned discussion of the subjects, such as many a less modest authority would be likely to inflict; but that was not to be the case. Here is the conundrum.

One Sunday, when visitors came to our farm, Mrs. Alexander scattered shelled corn on the front lawn and gave some coaxing "come-and-get-it" calls. Immediately, then, from all quarters, ran together an aggregation of Rhode Island Red



Dr. Stephen Moulton Babcock and his original tester.

and White Leghorn chickens, some Chinese and Emden geese, domesticated wild Mallards and Pekin ducks, bronze turkeys, three magnificent peacocks, a Clydesdale foal, a Guernsey calf, and lastly, some Duroc Jersey shoats. All of them eagerly gobbled up the corn, while exhibiting their various characteristics and colors.

"Doctor," I said, "all of these birds and beasts are eating corn and have been raised largely on corn. Is it chemistry, or what, that enables them to change the elements of corn into those rainbow-hued eyes on their tails, those feathers of different colors, those bay, yellow, and red coats of hair, those breed characters of form?"

There came no learned disquisition about metabolism, anabolism, katabolism, hormones, centrosomes, or heredity. The modest Doctor merely sounded his merry laugh and exclaimed:

"You may search me!"

That is characteristic of Doctor Babcock. He will not give a speculative answer. He has never "played to the galleries" with imaginative deductions founded upon hurried, incomplete, unproved experimental work. Ever, he has had perfectly to satisfy himself of the absolute correctness of his conclusions before publishing them to the world. Always, he has remained the shy, retiring, somewhat reticent "vehicle of expression" and never has he sought notoriety, fame, applause, or monetary gain from his work. What an admirable example he has set the younger, rising generation of research and field workers in this respect! They may well regard it and "go and do likewise."

This phase of Doctor Babcock's character is well illustrated by the following anecdote of him, told by Professor Andrew W. Hopkins, chief in journalism, at the Wisconsin College of Agriculture:

"One day he thought he had a test. His new test gave the same results as the older, more complicated ones that the scientists had been using. Time and again he tried it on the milk of the cows in the University herd and each time the new test checked with the old—until he came to Sylvia. That cow was merely a grade Shorthorn, but she was 'different.' Her milk did not test like that of the other cows. The readings on the new test did not correspond to those on the old.

" 'Give out the test anyway,' some friends urged the Doctor. Sylvia was only one cow in a herd of thirty, and a test which proved correct that often would help dairymen, they reasoned. But the Doctor could not see their point of view. No test was going out under his name that did not work on *all of the cows* of the University herd. So he went back to his laboratories to work until he had a test that was accurate, even for Sylvia's milk."

"Finally, after working some weeks more, he walked into Dean Henry's office, holding one of his test tubes in his hand, and exclaimed: 'Well, I have it at last.' "

And so it proved, for the Babcock butterfat test has "stood the test of time" practically unchanged and is, today, used throughout the world.

In addition to perfecting the test for butterfat which bears his name, Doctor Babcock, with Dr. H. L. Russell, worked out the cold process of

Not selfishness has ruled your life,
philosopher and sage,
Not gain and luxury of wealth have
been your aim and wage;
But service rich, of head and heart, in
love for all mankind,
You've freely, fully, gladly given,
with never self in mind.

Such service has its own reward,
unlooked for tho it be—
(Not told in titles, 'graved on stone,
or paid in golden fee)—;
In your own heart there is the joy
of noble work well done,
And in the heart of all the World,
deathless esteem you've won.

A. S. Alexander.

curing cheese, which has been widely adopted. He also has given dairy breeders a basis of breeding for production, which has made possible much of the development of the five great dairy breeds and likewise devised scientific ways of doing things that have enabled other scientists to go on in all branches of dairy chemistry.

Noting the retiring modesty of Doctor Babcock, one never would suspect that he had achieved such great things, chiefly since coming to the University of Wisconsin, in 1889, but well might understand why he did not patent his butterfat test and become a multimillionaire. However, the world would not consent to have him remain wholly unacknowledged. The Legislature of Wisconsin conferred upon him a huge bronze commemorative medal made in London, as an expression of appreciation. Tokens of esteem and admiration have come to him from many parts of the world, including far away New South Wales and Victoria, Australia. He received the "grand prize" from the world fairs of Paris and St. Louis. Thousands of commendatory letters also must have been received by the Doctor, but of these we have never heard him say a word, nor has he ever adopted a "high brow" mien or an air of superiority.

Democratic Simplicity

Many a morning I have seen Doctor Babcock humbly carrying a little pitcher of cream from a shop near his unpretentious home, caring not a whit who saw him or what they might think of his lack of dignity. If he ever heard of an old lady called "Mrs. Grundy" he certainly had forgotton her existence and pursued the even tenor of his simple, democratic ways, happy as a lark, with a cheery laugh and kindly greeting for everyone he met, except, perhaps, those who doffed the hat and tried to kowtow to him with well-intended respect.

I have seen many a half-fledged beginner in science put on painful airs of pleased complacency and self esteem, on the strength of some little achievement in the laboratory that, ten to one, would later be disproved. How pretty is the gas-distended pink toy balloon; how sad its collapse when someone pricks it with a pin!

All of these things have I thought of as I saw Doctor Babcock carrying that pint cream pitcher and stopping, perchance, to discuss with a "common laborer" or sophisticated barber's assistant the latest batting triumphs of Babe Ruth or some other celebrity of the baseball diamond. Yes, Doctor Babcock is a keen baseball and football fan and the University Athletic Department, in appreciation, set aside for him two choice seats in the grandstand for all its games.

Supreme Modesty

There is another side to Doctor Babcock's character that should be mentioned, as an illustration of his supreme modesty and integrity. That is his unselfish, generous recognition and appreciation of the work done by his colleagues. Often he has said: "All the credit is due to my able assistants"—such eminent men, in turn, as E. V. McCollum, E. B. Hart, Harry Steenbock, and others. Without question, he has given his associates many a valuable suggestion that enabled them to do admirable work which later brought them fame. The wise old brain of Doctor Babcock ever was scheming new experimental work —it is today—and the variety and scope of the ideas there conceived probably have been exceeded by few.

In his early days, Doctor Babcock had not been "spoon fed," as are so many of our students in science today. He had not been surrounded with the latest, most modern and expensive equipment imaginable, nor had he an instructor at each ear and printed laboratory guides plainly directing every step in each process of experimental work.

Several times he has told me that

(*Turn to page* 60)

A pasture scene in Ashe County, North Carolina—a natural dairy country

What's Happening?

By F. H. Jeter

Agricultural Editor, North Carolina State College of Agriculture and Engineering

TOBACCO is king in North Carolina, if one should be interested in titles. Cotton is the imperial prime minister. But the titles and emoluments of both are shaky. Not that we shall ever discontinue the growing of these two crops, as the old timer in farm institute work would say, but other things are engaging the attention of Tarheel farmers and some of these other things are making a right attractive showing.

Most folks not fully acquainted with North Carolina farming think that it embraces only the growing of tobacco and cotton with a few peanuts in the northeastern part of the State, a good acreage of soybeans in the tidewater country, and some truck, fruit, and forage crops where folks don't know any better. At one time that might have encompassed the correct view-point. Now it doesn't. North Carolina has a changing agriculture.

I never could handle figures very intelligently, my own included, for despite a wish to appear youthful and graceful the ravages of the years have brought about a certain rotundity which is neither pleasing nor desirable; and so, when I must use figures, I generally deal only in round numbers. From what the last farm census of this State reports, the tobacco crop of 1929 was worth at farm value $93,991,000 and the cotton crop for the same year, lint only, was worth $60,574,270. The acre value of tobacco was $123.03 which by far exceeded anything else grown in the State except early and late irish potatoes and the commercial truck crops grown in restricted areas.

Therefore, one can't greatly blame a good tobacco farmer for growing the crop of his choice. The same is true of cotton. Even at the low acre value of $32.02 for last year, cotton also exceeded the other crops, except those mentioned for tobacco and with the addition of sweet potatoes, sugar cane, sorghum, peanuts, and cowpeas. Cotton is a delightful crop to grow and

when the farmers of this State begin to concentrate on the kind of staple needed by the textile mills of the Southeast, it will pay more profit.

In the meantime, however, the bulk of farm wealth in North Carolina comes from the production of tobacco and cotton. Slowly and steadily other new enterprises are being placed on a business basis with resulting good returns and one hears more now of pastures, hay crops, hogs, chickens, beef cattle, sheep, purebred dairy cows and other things than he did formerly.

On the Dirt Roads

Recently I had the pleasure of spending about two weeks in a swing about over the State. The trip took me from the blackland region of the tidewater to a turkey farm some 3,000 feet above sea-level in Madison county. Nor did we spend the whole time on the magnificent hard road system which covers the State.

Much of the time was out on the dirt roads of the counties along which the real farming is done. Some interesting facts were found. The dairy people began to point out farm after farm where a few purebred cows had been placed or a purebred bull had been recently purchased. They said that dairying with its attendant activity of growing pasture and hay crops is becoming one of the major farm industries of this crop country. As an evidence, they gave figures showing the value of the milk and milk products produced last year to be about $20,000,000.

There are now 20 buttermaking plants or creameries buying butterfat from 11,000 farmers. There are 32 ice-cream plants, and the milk plants of the small cities bought over 10,000,000 gallons of milk last year while local dairymen selling to city consumers pocketed about $15,000,000 from their sales. A great new dairy industry is springing up in the mountains of northwestern Carolina where a large cheese factory has just been finished. This western country is naturally a pasture section and is the home of lush grasses and succulent clovers. There are no wild onions and the cool springs and equable climate permit milk to be delivered fresh and sweet.

Then in the foothills and upper piedmont, where cotton apparently is being grown with more profit than anywhere else in the State, it was found that these folks are also interested in pasture. One out of every three farmers in Alamance county planted pastures in the campaign conducted there this winter. About 3,000 acres of permanent pasture were seeded in addition to about the same amount seeded last spring. Alamance claims to have the largest Jersey calf club in the world with 175 boys and girls owning purebred heifers. Rowan county seeded over 5,000 acres of sweet clover and Stanley planted over 20,000 acres of lespedeza this spring. Over in Union county where potash pays on all crops, 17,000 acres of lespedeza were planted.

E. C. Blair, extension agronomist, says that soybeans now occupy 25 per cent of all the cultivated land in 10 northeastern counties while one-sixth of the corn grown in the entire coastal plain area has cowpeas or soybeans intercropped with it.

Poultry Become Important

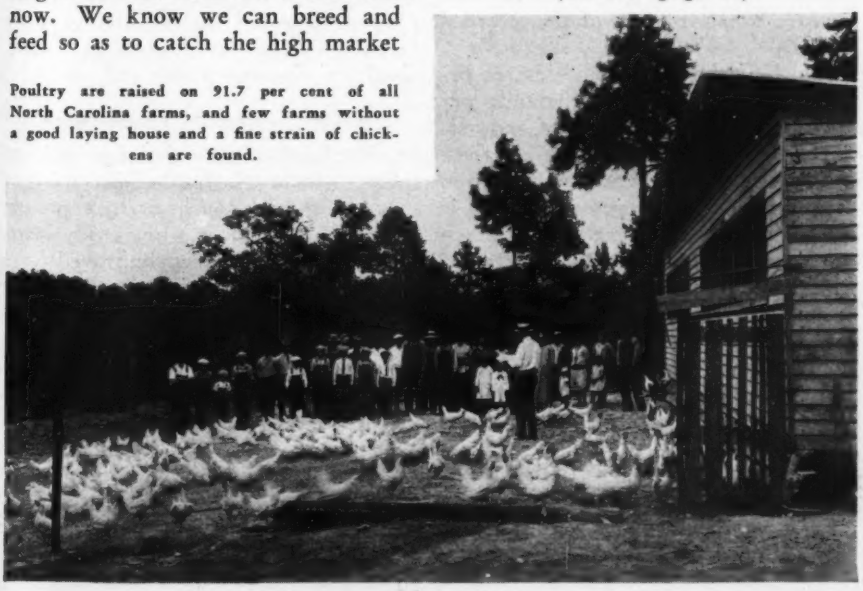
But it is not alone with dairying and its related feed and forage crops that a changing agriculture is apparent. North Carolina farmers are going after the poultry business in a way that means big money. The hatcheries are demanding that their supply flocks be blood-tested. All last winter, the veterinarians were busy blood-testing while the county agents and poultry extension specialists worked with them to cull out the loafing non-producers. As a consequence the percentage of baby chicks out of blood-tested flocks to die this spring was so low as to be practically nothing. Some poultrymen reported as low as 5 to 10 out of a 500-egg hatch. Thus, to hear good

Young pigs thrive on crimson clover pasture in eastern Carolina.

breeders tell of a business amounting to $12,000 and $15,000 a year gross was good news. One practical farmer said his poultry flock paid him a monthly wage of $250 a month. Another said he got $3,000 a year out of his farm poultry flock. The entire value of poultry and poultry products produced in North Carolina now is nearly $38,000,000 and the industry has just begun to get started. In six months last year nearly 6,000,000 pounds of live poultry were sold co-operatively at the market cars loaded regularly by farm agents.

Hog feeding and shipping are getting to be sciences in the Tarheel State now. We know we can breed and feed so as to catch the high market in March and September. We can have early farrowed pigs that the Midwestern breeder can't have and when this plan gets to working smoothly, it's going to be too bad for the famous corn belt. W. W. Shay is conducting feeding demonstrations all over eastern Carolina and he is unyielding about feeding corn and such supplements as will produce hard pork and hard pork only. As a result of his demonstrations, more than $500,000 in new hog money went to a few growers in 30 eastern counties last fall. These animals paid about $1.50 a bushel for the corn consumed.

(*Turn to page* 48)



Poultry are raised on 91.7 per cent of all North Carolina farms, and few farms without a good laying house and a fine strain of chickens are found.

ASPARAGUS

What an acre should yield, and how to get big yields

By A. E. Wilkinson

Vegetable Specialist, Connecticut Agricultural College

BEFORE a business is to be taken under consideration, some statement as to its possibilities should be at hand. Let us consider the business of asparagus raising. What is our knowledge as to yields per acre?

Our knowledge of actual yields is very limited. The data available seemingly skips this most important fact. The reason for this shortage of yield facts is undoubtedly due to the wide variations in yields due to the variety, the soil, the fertilizer, the weeds, the spacing of plants, pest control, etc. All of these factors, if unfavorable, or any one may cause low yields. But let us get down to brass tacks. What are some of the recorded yields?

Most of the recorded yields are between 1,500 and 2,500 pounds per acre for the cutting season of approximately 7 to 8 weeks. Multiply these figures by the average price of from 7 cents to 15 cents per pound and it is immediately seen that there is much to learn and to be done if a reasonably sized income is to be received from asparagus. By doubling the gross yield, thereby increasing the total income, the expense is not necessarily doubled, and the net results may then reach a fairly profitable figure.

How can one double the yield? One of the best answers can be found in the recorded facts of a grower who has doubled the above yield. The grower, Joseph Humphries & Sons, Danbury, Connecticut, has produced more than 5,000 pounds of asparagus per acre in each of the last two years, 1929 and 1928.

A brief description of the methods employed are as follows:

The variety selected — Martha Washington, is a high producing, rust resistant sort, of good quality.

The seeds were sown in 1922 in nursery rows 12 inches apart and from one-half to one inch apart in the row. A very liberal supply of a 4-8-10 fertilizer was used on this nursery stock; also two applications of nitrogenous fertilizer as a side-dressing were given during the growing season. The results—large sized, healthy, vigorous plants and roots!

Good Cultural Conditions

The farm offers a choice of soil and slope which has resulted in using a quietly sloping southeastern exposure, the soil of which is a fine sandy loam. The top soil had been improved by a previous good farm rotation so that it is 9 to 10 inches deep.

In 1923 the bed, one acre by measure, was set out using the above mentioned, home raised plants. The rows are five feet apart and 248 feet long. Plants are spaced closer in the row than the general practice, that is, 10 to 12 inches apart. Close spacing results in earlier, heavy yields. The

(*Turn to page* 53)

A New Palace of Agriculture

By U. V. Wilcox

Washington, D. C.

"TAMA JIM" WILSON, Secretary of Agriculture, under whose leadership the new Department of Agriculture Building had its initiation was a canny Scot. He asked Congress for an appropriation for the erection of a new structure to house the personnel of the Department. Congress granted a certain amount of money, but not enough to meet his expectations.

Mr. Wilson, though disappointed, accepted the money, and used it for the construction of two large stone wings with a great hole in between them. He wanted to force Congress to appropriate funds to build in the hole—a central building. This central building is now completed, after the first start made in 1905 by Secretary James Wilson.

The location for the first part of the building, the two wings, was selected in a romantic manner. President Roosevelt and "Tama Jim" Wilson were walking over the premises to secure a place for the erection of the two disjointed wings. While they were walking along, President Roosevelt struck his walking stick on the ground, turned on his heel, and said, "Lay the corner stone there!"

"The central structure now completed is the most beautiful edifice of any kind in the world," declares Emmet A. Steece, construction engineer in the Department of the Treasury. "It has the most correct proportions and best setting of any building in the world. Its pleasing harmony of proportions provides the spectator with the satisfaction he could obtain from the contemplation of a symmetrically conceived structure."

Harmony With Utility

In addition to its harmony of parts, the new central portion is a delight to farmers and others who visit the Capital city. A large court is found inside the main building. This is the palm court which is used for a conference room, exhibition hall, and general meeting place. Plant specialists of the Department, who know the effect of daylight on the growing of plants, have made it possible to produce iris on Thanksgiving and Christmas and poinsettias on the Fourth of July, within this court.

The inner court is two stories high and at the third story floor level it has been topped with a roof of glass. On the second floor level a corridor surrounds the palm court. At each side of the inner court two "Juliet" balconies have been built.

On the first floor level, the inner court is surrounded by a corridor from which descent is made into the court itself down three steps. The floor here is constructed of ear-resonant travertine marble with a cream-colored hue. This deadens the sound of footsteps and gives a sense of quietness. A fountain bubbles in the center of the court.

On one wall there is a huge doorway with an arched top where there is placed the Department's World War Memorial. This is of white marble. On one side is a life-sized soldier and on the other a life-sized sailor, each in marble. In between are the names of those men of the Department who went to France and did not return.

Other facts regarding this home for agriculture's purposes, indicate the pains taken to give the utmost in harmony with utility. Fifteen different kinds of marble are found in the interior trim, but the exterior is Georgia and Massachusetts marble. There are two great bronze doors leading into the main entrance lobby which cost $15,000. The carved marble stairway leading from the entrance lobby to the second floor is framed in mural wall paintings.

The main office is 20 feet wide by 45 feet long. This is the Secretary's office. Flanking this, right and left, are rooms almost as large, which are now occupied by the Secretary's assistant and staff.

Soft diffused lighting illuminates the interior. Daylight is softened by the glassed second story roof over the court, and above this are set powerful flood lights spaced at intervals on the exterior walls of the court.

As originally planned the central portion of the building was to have been four stories, with a dome surmounting the fourth story to harmonize with the New National Museum of the Smithsonian Institution, not far away. This plan had to be changed in order to give the fullest amount of room for working purposes. Now instead of the dome there is a fifth story on the facade. On this is erected an entablature.

Quotations Inspire

In order to secure appropriate mottoes for the facade, Secretary of Agriculture William M. Jardine, under whose term the work started, asked the land grant colleges and farmers' institutions throughout the country to suggest phrases to be used. The three which have been selected and now appear are from St. Paul, George Washington, and Abraham Lincoln.

On the left, is the quotation of St. Paul, which says: "The husbandmen who laboreth must be first partaker of the fruits." In the center, Lincoln is

(*Turn to page* 58)

A Bright Idea

By R. W. Donaldson

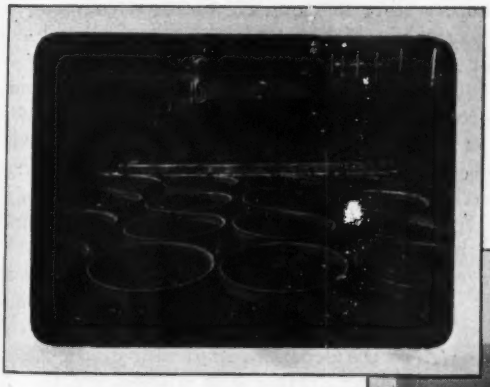
Extension Agronomist, Massachusetts Agricultural College

A few bolts and sixteen old tire rims make a pasture harrow.

FRED A. COOMBS of East Bridgewater, Massachusetts, has discovered a practical use on his farm for old tire rims and has solved the problem of a harrow costing little or nothing which he uses to break up and distribute manure droppings on his pasture.

Faced with appreciable waste, both of pasture feed and of manure occasioned by accumulations of droppings on improved pasture fields under intensive grazing methods, Mr. Coombs felt he could not afford the expensive harrows being imported from Europe for this purpose. A bright idea, a few bolts, and 16 discarded tire rims—salvaged from the nearest garage dump—solved his problem. The harrow is made of 16 tire rims of equal size placed four square and bolted loosely together with ½ inch bolts 3 inches long. Extra holes are drilled similar to the one already made for the valve stem, and the rims are then joined together with the bolts and nuts. He finds it advisable to allow an inch or so of play and to batter the ends of the bolts to prevent the nuts from rattling off. A stout pole serves as a cross-bar bolted to one side of the harrow, to which to hitch.

Mr. Coombs used this type of harrow all last season and some of his neighbors who saw it work have made harrows similar to it for use this year. Although it may be used as a two-horse hitch, it will do its best work when drawn at a more rapid rate of speed. Mr. Coombs hitched it behind (*Turn to page* 59)



Above: A home-made harrow used to break up manure droppings on improved pasture.

Right: This harrow, imported from Europe, is used on the pastures at the Massachusetts Agricultural College. Note how the harrow breaks and distributes a dropping, as indicated by the dark area marked by the white cloths.

Four-year Soils Improve- for Farm

Armund Freitag, Beaver Dam High School, Wisconsin, first-year winner of the 4-year soils improvement contest.

By

Rensselaer Sill

Wisconsin College of Agriculture

WHEN farm boys, a College of Agriculture, and teachers of agriculture in the Smith Hughes high schools, get together and talk shop, much can be accomplished in the way of furthering the adoption of profitable soil management practices. At least that was the experience of the late Professor Griffith Richards, soil extension specialist at the Wisconsin College of Agriculture, who a little over a year ago started some 30 farm boys in 22 counties throughout the State on a four-year soil improvement project.

Through the project, boys are offered an unusual opportunity to learn about various soil improvement practices and to furnish experimental data for use on the farms in their communities. As different kinds of fertilizers are being tested, rotation plans being laid, and the boys are making a rich use of phosphorus and acidity tests, there probably will be some material on soil practices that can be used by county agents, teachers of agriculture in the high schools, the extension service of the state college, and, of course, individual farmers.

In starting the project, the boy is urged to select a field with frontage on the highway, if possible. The field selected should be of average fertility or even one of the lower fertility fields on the farm. If the county in which the farm is located has been mapped by the soil survey, the boy is required to look up and record the soil type found on his field.

The youth rents the field from his father and assumes all financial responsibility. He receives the money from all crops sold from his field and also keeps a complete record of expenditures and receipts. A detailed history of the field and 12 samples each of the surface and subsoil are sent to the department of soils at the state college. Here, the samples are tested and the desirable recommendations forwarded to the boy.

Study the Problem

In planning a soil fertility program, the student uses the results of soil acidity tests, available phosphorus tests, and the history of his field, as a guide in outlining his soil work. He

ment Project Boys

State-wide work teaches soil management and effective use of fertilizers in long-time program

Louis Schlaver, Sparta High School, Wisconsin, found that potash increased his yield of State's Pride oats. The plot above was fertilized with 300 lbs. of superphosphate per acre, but the plot below received 200 lbs. of muriate of potash in addition to the superphosphate. The alfalfa also was better on the plots treated with potash.

also reviews the Wisconsin soil bulletins that help him to obtain a better understanding of the problem, and prepares a soil improvement plan which is submitted for approval to his agricultural teacher and to the director of the project at the state college.

Directions for leaving a check strip in the field, for applying lime, fertilizers, and manure, for planning rotations, and for harvesting and weighing his crop, are given to the boy in addition to suggestions on keeping his accounts and writing the final report.

To encourage participation in the project, $100 in cash prizes were offered last year's winners. The first prize was $30; the second, $20; the third, $15; and the rest of the money was distributed in varying amounts among seven other boys.

Devise a Score Card

The judges of the project felt the need for some kind of score card, so one was outlined along the following lines. Twenty-five points were granted for the boy's plan of his long-time soil improvement project; here such things as the written plan, a diagram of the field, the arrangement of the plots, and their labeling, were considered. Com-

pleteness of data received a perfect score of 50 points; under this heading records of yields, amounts of fertilizer applied, amounts of seed sown and the kind, were all given attention. The present condition of the project was rated 15 points; the cultural methods used and freedom from weeds were considered under this head. And the story of the project, which consisted of a narrative with pictures to show the history of the field and the results obtained, was believed by the judges to be worth a perfect score of 10 points.

Show Keen Interest

Perhaps there is nothing of exceptional interest to boys about such a four-year soil improvement project. However, judging from the attractive way the reports were prepared with the maps oftentimes done in water color, and from the way the boys talk about *their* rotations, *their* crops, fertilizers, income, etc., they are not only enthusiastic over the plan, but are looking forward eagerly to the work of the second year. The majority of them have plowed their fields, put their crops in with the right kinds of fertilizers, and another successful year will undoubtedly be realized.

As the $100.00 in prize money looked mighty good to the boys and as there was real money to be made from the crops grown during the four years, the lads rolled up their sleeves and pitched in from the start. They devoted considerable time to the planning and working of their fields and most of them did exceedingly well, according to the late Professor Richards, who was director of the project. It was a great and long looked for day when judging time finally arrived.

The first prize of $30 went to Armund Oscar Frietag, a freshman in the high school, Beaver Dam, Wisconsin. Armund's report is a masterpiece of thoroughness. On his corn he applied two tons of lime to the acre and a 2-16-2 fertilizer used at the rate of 125 pounds per acre, and obtained a yield of 63 pounds per hundred feet of row from the fertilized and limed portion of his field, and 54 pounds per hundred feet of row from the unfertilized and unlimed part, a difference of 9 pounds in favor of the 2-16-2 fertilizer and lime per hundred feet of row. But, perhaps it would be best to let him tell his own story about his first year in the four-year soil improvement project.

On May 17, he says, I started my corn project by planting five acres of Silver King corn. Within a week and a half the corn came up with no difference between the fertilized and unfertilized strips. June 20 the corn was knee high with the fertilized strip having a dark green color and on the average two inches higher than the unfertilized corn, which had a yellowish color.

On October 19, Armund goes on to say, the corn was shredded and yielded altogether 300 bushels. My total credits amounted to $300, while my total expenditures were $234.78, leaving me $65.22 of clear money. His prize money amounted to $30.00, thus bringing his total profit from the five acres up to $95.22.

Keep Cost Records

In keeping cost records of their projects, the boys figured labor at about 25 cents an hour; and the cost of using the equipment, the rental of their fields, freight charges, hauling, insurance, the cost of the plot signs, seed, and fertilizers, were all given a place on their accounts.

Armund's rotation is corn, barley, alfalfa, alfalfa. So this year he is seeding his field in barbless barley and certified, inoculated Grimm alfalfa.

Then there is George Brehmer, freshman in the Clintonville high school, who says the soil on their farm is of the blow-sandy nature. After plowing, he states, the sand drifts to such an extent that it covers the fence posts in some places. The neighbor across the road had to build a new

(*Turn to page 56*)

Umm—Good Melon!

By E. R. Lancashire

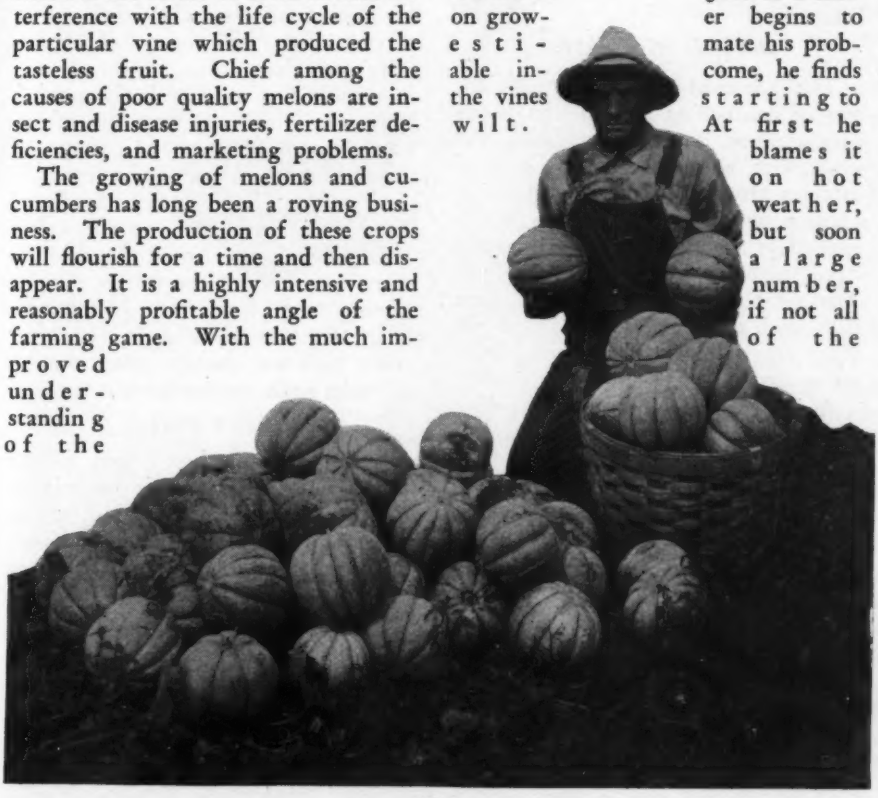
Vegetable Specialist, Ohio State University

SUCCESS in the business of producing melons of desirable quality involves careful attention to each step from the planting of the seed to the marketing of the crop. If somewhere in this cycle, the melon farmer hesitates, even a little, the elusive flavor of the melon is lost. How to put flavor into a melon is largely a matter of knowing how to prevent its escape.

Melons do not taste like pumpkins of their own accord. A flat tasting melon is the result of some outside interference with the life cycle of the particular vine which produced the tasteless fruit. Chief among the causes of poor quality melons are insect and disease injuries, fertilizer deficiencies, and marketing problems.

The growing of melons and cucumbers has long been a roving business. The production of these crops will flourish for a time and then disappear. It is a highly intensive and reasonably profitable angle of the farming game. With the much improved understanding of the causes of failure, it is now possible to grow melons where melons would not grow before. Failure can be wiped out, and success can be set up in its place. Proof of this fact is found in the numerous instances of successful melon production in parts of the country where the job once was given up as hopeless.

It is now a well-known fact that a melon vine unprotected from the striped cucumber beetle will wilt and die before fruits can be normally matured. Just as a melon grower begins to estimate his probable income, he finds the vines starting to wilt. At first he blames it on hot weather, but soon a large number, if not all of the



vines, are dying, and then he knows something else is wrong.

The facts are that a disease, known as bacterial wilt, was carried over winter in the stomach of the striped cucumber beetle. As soon as the melon vines are above the ground in the early part of their growth, these beetles find them. All they have to do is wave their antennae in the air. By so doing nature makes it possible for them to fly directly to a melon patch even though it be located at a considerable distance. Man with his radio is just beginning to catch up with the cucumber beetle.

The beetle chews on the stems and leaves of the melon plants and deposits droppings on them. The bacterial wilt organisms are thus transferred from the body of the beetle to the melon plant. First and foremost among the practices of the successful melon grower is the control of the beetle.

Methods of Control

The cheapest and most efficient way of controlling these beetles at the present time is that of dusting the vines with a mixture of one part of calcium arsenate and twenty parts of gypsum or land plaster. The dust is applied as soon as the seedling plants have reached the surface of the soil. The same dust is applied every five days and after every rain until the vines are well grown and the beetles are controlled.

A dust gun which enables the melon grower to direct a blast of the calcium arsenate-gypsum dust at the under sides of the melon leaves is one of the working tools of those who are listed as successful growers. Thin layers of the dust applied frequently are necessary if the grower wants to keep the melon flavor in the fruits. The least let-up in the business of controlling the beetles usually results in a poor quality of fruit.

A well-mixed dust can be made by the grower. An old revolving wooden churn can be used or the ingredients can be mixed together in a steel drum fitted with a piece of coarse wire netting to act as a breaker. Some men use stones or short lengths of chain in the drum instead of the wire breaker.

At least one other insect causes serious injury to the melon crop. The little plant louse, called the melon aphis, need not become a serious pest if taken in time. A home-made nicotine dust can be prepared by mixing together three pints of 40 per cent nicotine sulfate and 50 pounds of hydrated lime. The nicotine is poured on the lime and mixed as in the case of the dust for beetles.

Freshly mixed dusts are preferred because they are stronger. This dust is directed at the lice which eat on the under sides of the leaves. The cheapest and most efficient time to apply this dust is during the hottest period of the day and as soon as the lice first attack the melon leaves. One or two dusts will control if applied early enough.

A third dust mixture is also needed. This one is made as were the others. The ingredients are 15 parts of monohydrated copper sulfate and 85 parts of fresh superfine, hydrated lime. This lime will pass through a 300-mesh screen. About the time the vines begin to run the foliage diseases appear, and this dust is applied. Every five to seven days and after every rain are usually often enough to make such applications.

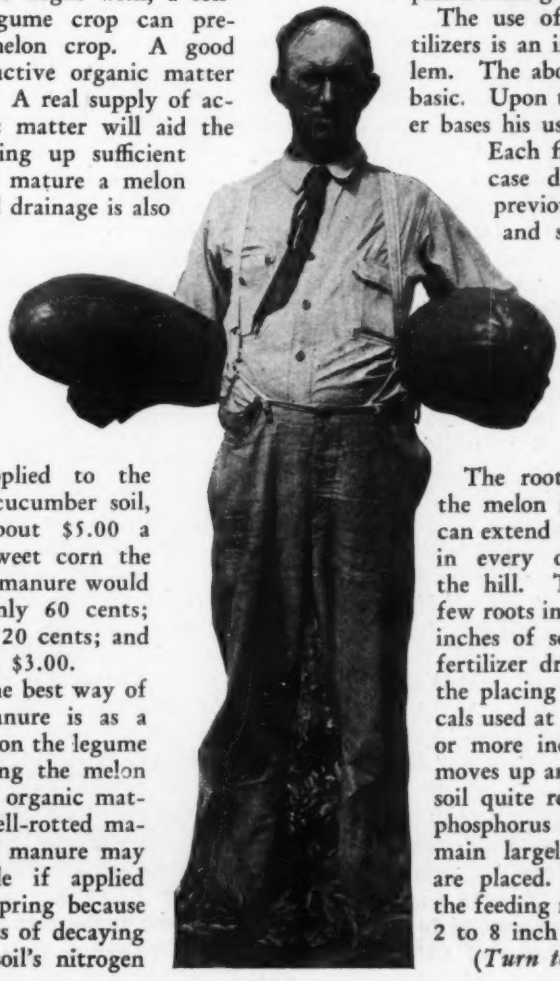
To Get Flavor

A combination beetle and foliage disease dust can be made by mixing together 5 pounds of calcium arsenate, 15 pounds of monohydrated copper sulfate, and 85 pounds of hydrated lime. Any dust containng copper and lime is most efficient if applied soon after the dew is on the vines in the evening. This copper-lime dust in the presence of water will form bordeaux mixture if fresh superfine lime is used. The copper lime-dust is directed at the under sides of the

leaves.

The melon grower who follows such a dusting program and who rotates his melon crop and keeps weeds under control is usually able to offer fine flavored melons to his market. The melon business has come to that phase of its existence where it is next to impossible to grow a good flavored product without using this program of insect and disease control. It is a case of controlling insects and diseases or of giving up the production of melons where these troubles are common.

Flavor in the melon depends also upon the proper balance of fertilizer elements. To begin with, a soil-building legume crop can precede the melon crop. A good supply of active organic matter is essential. A real supply of active organic matter will aid the soil in storing up sufficient moisture to mature a melon crop. Good drainage is also essential.



A fast growing vine is desired in the case of a melon. Well-rotted manure, properly applied to the melon and cucumber soil, is worth about $5.00 a ton. On sweet corn the same ton of manure would be worth only 60 cents; on cabbage, 20 cents; and on tomatoes, $3.00.

Perhaps the best way of applying manure is as a top-dressing on the legume crop preceding the melon crop. Active organic matter means well-rotted manure. Fresh manure may cause trouble if applied late in the spring because in the process of decaying it uses the soil's nitrogen supply.

As to commercial fertilizers, in Ohio and under similar conditions a 4-12-4 is practical on any light colored soil, A 2-14-4 is used on all dark colored soils except mucks and peats, where an 0-12-12 is best. These complete, balanced fertilizers are applied broadcast with a wheat drill at the rate of 1,000 pounds per acre. If row application is used only 500 pounds per acre is needed.

Top-dressings of available nitrogen are also profitable. From 30 to 50 pounds per acre of available nitrogen are applied along the rows in one application made three weeks after the plants start growth.

The use of chemical fertilizers is an individual problem. The above analyses are basic. Upon them the grower bases his use of fertilizers. Each field is a special case depending upon previous treatment, and so each grower will need to deviate from the basic recommendations as he finds it profitable.

The rooting system of the melon is such that it can extend 15 feet or more in every direction from the hill. There are very few roots in the upper two inches of soil, and so the fertilizer drilling calls for the placing of the chemicals used at a depth of two or more inches. Nitrogen moves up and down in the soil quite readily, but the phosphorus and potash remain largely where they are placed. The bulk of the feeding roots are in the 2 to 8 inch levels.

(*Turn to page* 61)

Fertilizing Good Alfalfa Land

By S. D. Conner and R. R. Mulvey

Department of Agronomy, Purdue University

IF you had a field that had produced an average annual yield of 7,417 pounds of alfalfa hay for 13 successive years, without any lime, fertilizer or manure, you would no doubt say that it was good alfalfa land and did not need anything. You would be confirmed in this opinion if the thirteenth year without treatment gave you 8,580 pounds of good cured hay on two cuttings. Now this is exactly what has happened on the continuous alfalfa plots on the Wilson farm of the Purdue Station at Lafayette, Indiana. The soil is a medium dark soil which is mapped as Brookston silt loam.

If none of the plots in this experiment had been treated in various ways with lime, phosphate, and potash, we might just dismiss the subject and say that it was not necessary to add anything to this kind of land for alfalfa. Let us see what has happened where this land had one application of three tons limestone per acre. For the first 10 years the limed alfalfa averaged only 160 pounds more than the unlimed. This is a slightly acid soil and often in answer to the question do you know of any acid soil that does not need lime? we would answer, yes, and then cite this experiment.

In 1926 we plowed the old alfalfa sod under and reseeded in August. The unlimed plot was distinctly inferior to the limed land and for the three years 1927, 1928 and 1929, the lime which was applied in 1916 gave an average increase of 843 pounds of alfalfa per acre per year. This was profitable and it can no longer be said, we have acid soil which does not respond to lime for alfalfa.

Phosphate is recommended generally as almost as important as lime for alfalfa. Precipitated bone, furnishing 40 pounds P_2O_5 per acre per year at a cost of $2.80, was used on one plot in addition to lime. This phosphate gave an average increase of about 100 pounds per acre per year, which was not profitable. In the thirteenth year, however, some of the plots had been refertilized, so that potash, lime, and phosphate could be compared to potash and lime. This comparison showed an increase of 710 pounds of alfalfa per acre for phosphate, which was profitable.

Needs Plenty of Potash

During the 13 years there has been a comparison of lime and phosphate with lime, phosphate, and potash. Where potash was applied at an average rate of 12½ pounds of K_2O per acre per year, the potash has increased the annual yield 540 pounds per acre. Twenty-five pounds of potash have given an increase of 862 pounds of alfalfa.

With alfalfa at $12 per ton and potash at 6c per pound, which certainly are fair farm prices, the 12½ pounds of potash costing $.75 brought in $3.24 worth of alfalfa with a net profit of $2.49 per acre per year. The heavier application of potash cost-

(*Turn to page 59*)

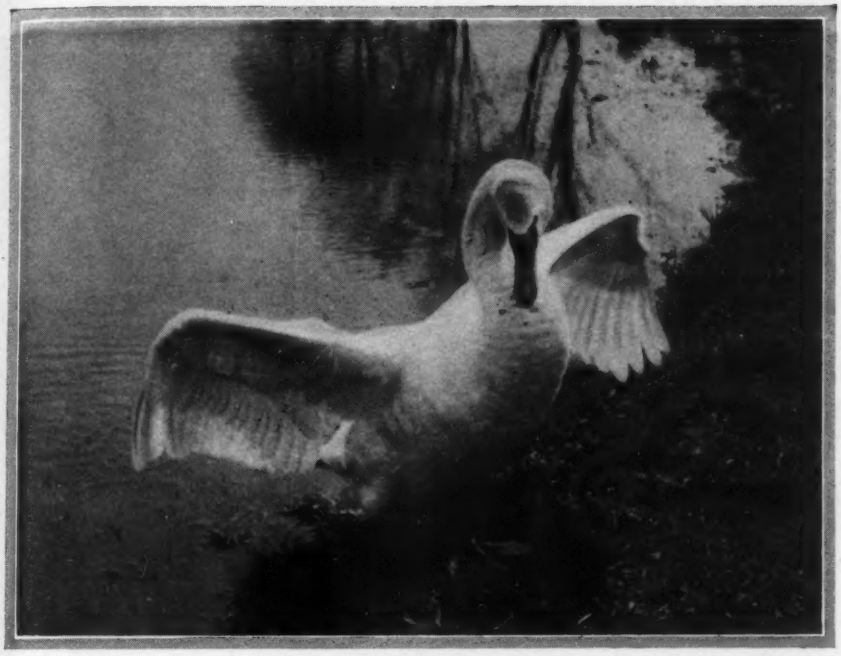
THE TOURIST

GOLF, FOR EXERCISE

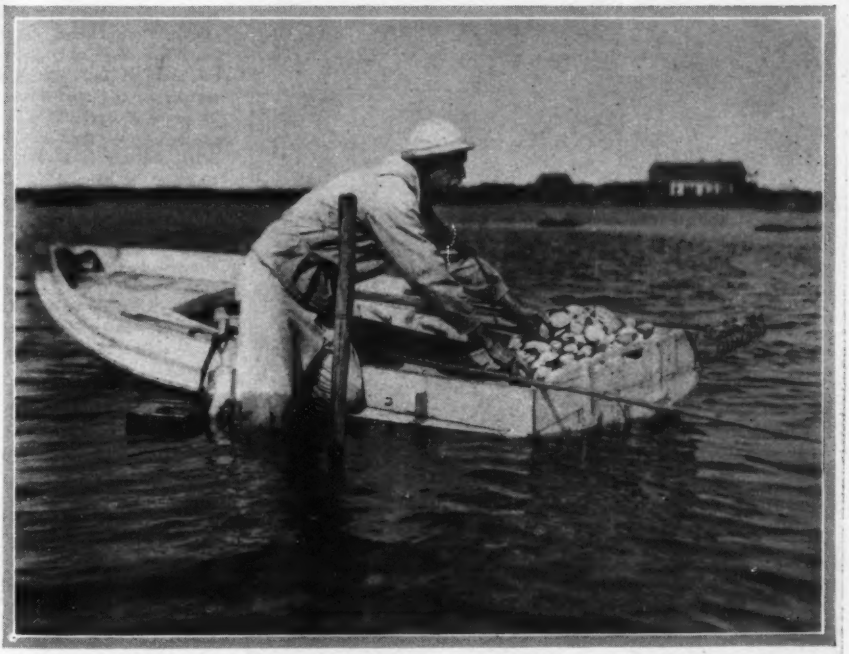
This putting machine tells the difference in suitability of different kinds of grass and different lengths and conditions of dryness or wetness. The arm swings pendulum fashion and always strikes the same blow. The distance the ball travels tells what effect the grass has on it.

Picking beans interplanted with parsley, Lake county, Florida. These people have no need to golf for exercise, for a few hours at this kind of work, or any kind of gardening, are enough to "keep in shape." Farm folks' favorite summer recreation is motoring.

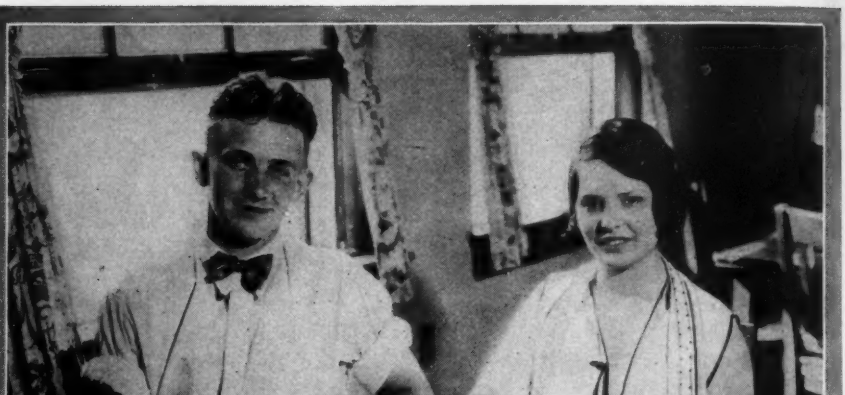
UNFORTUNATELY CAST



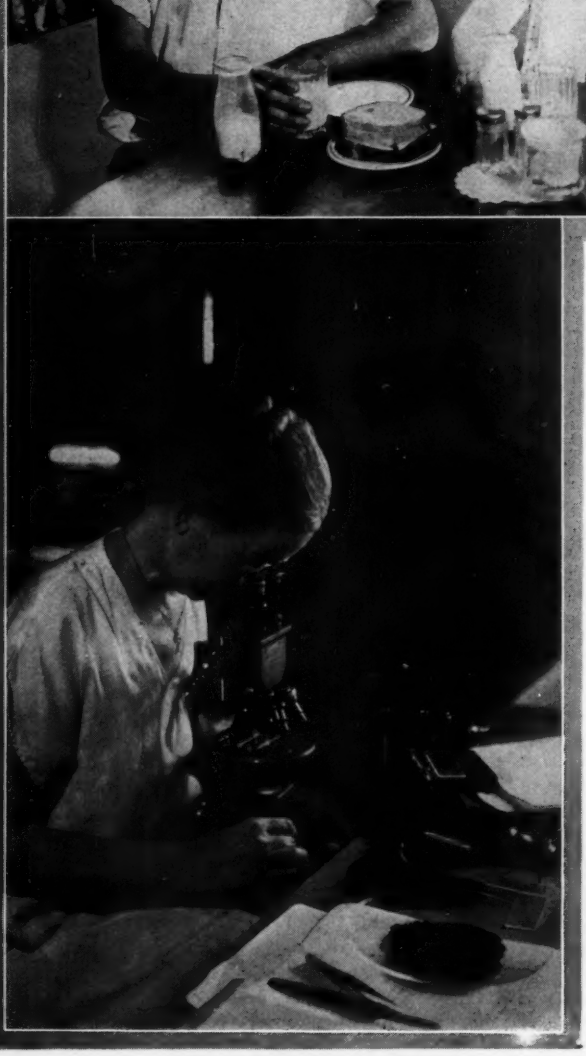
In fighting mood! The beautiful swans which grace our parks have never been more than half-domesticated. There is only one large swannery in existence—located at Norwich, England—where the young, called cygnets, are fattened for the table. Cygnets are high]y esteemed as food.



A typical scene in any of the bays along the northeastern Atlantic coast. During certain seasons of the year, thousands of people engage in the clamming industry. The clams are raked from the soft ooze, carefully washed, sorted, packed in ice, and dispatched to near-by markets.



Above: Frederick Wingate, who scored 98.7 per cent, and Carolyn Boyle, who scored 99.3 per cent, recently were chosen as the healthiest boy and girl in the State of Indiana. Wingate is 19 and Miss Boyle is 15 years of age. They will compete in the national health contest to be held in Chicago in the fall. The eating of fruits and vegetables, meat once a day, plenty of sleep and exercise, and the drinking of milk were given by the couple as contributing factors for their near-perfect states of health.



Left: A number of women scientists are included among the large number of technical workers in the United States Department of Agriculture. Dr. Alberta Read is senior microanalyst in the Food, Drug, and Insecticide Administration. She is using a photo-micrographic outfit, which makes photographs through the microscope.

The Editors Talk

Soil Science Congress

Three years ago the first International Congress of Soil Scientists met in Washington and afterwards made a tour of some 10,000 miles in the United States. This international meeting is held every three years. This year it is being held in Russia.

Delegates and others, many from agricultural colleges and experiment stations, are leaving now on the long journey to the coming meetings in Russia. A similar plan will be followed after the meetings; tours through typical agricultural regions of Russia will be arranged.

Whether or not one fully agrees with the teachings of the Russian school of soil scientists, at least their work has created a definite stimulus in soil science; has given the subject a new impetus and a new lease on life to which the world of soil scientists has not been indifferent.

Whether the coming Congress will clarify the problems and in any way correlate the very divergent ideas of this science, remain to be seen. It is to be hoped that it will. At least everybody will look forward to the return or our friends and will be glad to hear what has been said and what has been accomplished.

For the present we wish all who are going Godspeed and a safe return.

Economics and Retail Prices

Many companies selling fertilizer materials quote the wholesale prices of such materials to fertilizer manufacturers. Wholesale prices are important, but farmers do not buy fertilizers at wholesale prices. They buy at retail prices. Thus, it is the retail price that is of primary importance to the consumer, and likewise is the major factor that affects the distribution of fertilizers.

Wholesale prices of fertilizer materials are available—something is known about such prices.

On the other hand, very little is known about the retail prices of either fertilizer materials or mixed fertilizers. Since most of the plant food consumed in the United States is used in mixed fertilizers, an economic study of distribution and prices necessarily involves the retail prices of mixed fertilizers, as well as the retail prices of materials.

This problem of retail prices is one that needs much more systematic study than it has received.

Some of the questions that should be answered by such a study of retail prices are as follows:

Regarding fertilizer materials—

1. What is the margin between the wholesale price and the retail price of different fertilizer materials? How much is added to the whole-

sale price of each fertilizer material by the time the farmer buys it? Is this margin getting larger or smaller? What are the economic causes of any changes in the margin?

2. Is the use of straight fertilizer materials increasing or decreasing? Are there economic causes for such changes?
3. Is the margin between the wholesale price of fertilizer materials and the retail price the same for all materials or greater for some than for others? Is the cost of distribution of some materials excessive as compared with the cost of distribution of others?

Regarding mixed fertilizers—

1. What effect do the changes in the wholesale prices of different materials have on the retail prices in the complete mixed goods?
2. How do changes in the retail prices of complete fertilizer per unit change in ammonia, phosphoric acid, and potash content compare with each other?
3. What effect do changes in wholesale prices in materials have on the prices of mixed fertilizers?
4. What is the cost of manufacturing and distributing mixed fertilizers? Is this increasing or decreasing?
5. What part of the retail price of mixed fertilizers is the cost of materials?
6. What are the retail prices of mixed fertilizers? Are they increasing or decreasing?
7. What is the relationship between the analysis and price of mixed fertilizers? What are the factors affecting the retail price of mixed fertilizers?

Modern economics and statistics are becoming as scientific as chemistry or any other science. They are just as helpful in solving the problems of industry as are the other older sciences. In short, the job of modern economic studies is to aid the judgment, to take much of the guess out of industrial problems, and certainly a great deal of guess needs to be taken out of the problem of retail prices of fertilizer.

Cornell World Host

Representatives from 15 foreign countries and the United States are expected to attend the international conference of agricultural economists at Cornell University, August 18-29. This is the second conference growing out of a great movement to get a world viewpiont from related interests pertaining to marketing, agricultural statistics, farm management, agricultural credit, prices, land economics, taxation, etc.

The first conference was held at Dartington Hall, Devon, England in 1929 and was attended by representatives from 12 countries including about 15 persons from Canada and United States. This group requested the Cornell representatives to organize a similar conference at Ithaca this year.

The movement is highly commendable. America has its agricultural problems. Other countries have similar problems. In some of these countries progress has been made toward solutions which may apply here. Some of our results may apply in other countries. It is indeed fortunate that the meeting comes to the United States this year when farm relief is so prominently before the public mind.

In addition to the foreign representatives and official representatives from

the United States Department of Agriculture and various educational institutions, economists from several large industries closely allied to agriculture, will attend the conference. The Ministry of Agriculture in England has already provided eight traveling fellowships for the 1930 conference and promises other representatives from England and Scotland.

Our Changing Agriculture

An excellent article by F. H. Jeter on another page points out in a most interesting manner some of the changes that are taking place in our agriculture, in this case in North Carolina. The State is famed far and wide for tobacco and cotton. Everybody knows about these two crops, but who would expect to find the largest Jersey calf club in the world, with 175 boys and girls owning purebred heifers, located in North Carolina. The milk and milk products of the State produced last year were valued at $20,000,000. There are now 20 buttermaking plants or creameries buying butterfat from 11,000 farmers. In the mountains of northwestern Carolina a new industry is springing up in the shape of cheese factories.

As the author points out, it is not alone with dairying that a change in agriculture is apparent—North Carolina farmers are going after the poultry business also. Hog-feeding and shipping are getting to be quite an industry.

Better farming means getting away from single cropping systems. It means the use of the land for which it is best fitted. The fertilizer industry can well take note of these changes taking place in Carolina. It sells most of its materials for three or four crops—cotton, tobacco, potatoes, and truck crops. It has good and bad years, according to whether these crop prices are good or bad. The fertilizer industry needs to learn diversification as much as does the farmer, and a good place to get an example is North Carolina.

Getting On

"Getting on" is of universal interest because we all want to get there. Some know more definitely than others, for some have a goal and others have merely the desire, but we all want to get there—to "get on."

Classic literature from the Bible to Ruskin and writers of the present day have told us how to do it. But apparently each generation has to learn for itself all over again, because each generation is wiser than the previous one or at least thinks it is, which is the same thing, when it steps out on the road to "getting on."

Eventually we discover the truth so simply stated ages ago,—that the more we think of "I" in getting on, the less progress we make; the more we think of others, the greater the progress to the desired goal.

Look around anywhere at the "I" man, pushing, forceful, claiming credit for all and sundry, satisfying his wants and his desires. What is his progress? Good for a time, yes! He dominates and progresses. Then his world, small or large, gets tired of him. By middle age he is making less progress. A few years later his enemies see to it that he less and less gets his own way. His troubles accumulate. He blames the world, circumstances and other people. He becomes soured and tyrannical. He never reaches the goal.

Better and of a higher type is the "we" man. He works for himself and his group. This is the standard aimed at among trained bodies of men in schools, colleges, armies, fraternities, etc. Self to some extent is suppressed. The "we" man thinks not only of himself, but of others to the extent of thinking of his group, cooperating with them, acting with them in his own and their interests—but still not much beyond his group. His is a group interest. The "we" man is a higher type. He gets on better. His friends are more loyal. His opportunities are greater. As the world goes, it is a fairly high standard to attain.

Finally, then, is the "you" man. Self at this stage is almost entirely suppressed. His motive for action is "What do you want? What do the customer, my friends, the other man want?" He reaches his goal. The world, his world, is ever behind him, pushing and supporting him, but his numbers are small for he is a genius.

I—we—you—look around and learn. Discover if it is not true. Getting on is pretty largely in proportion to the ability to forget self.

The Growing Southwest

We are hearing much more from the Southwestern States agriculturally than we used to. This story is told by E. B. Ferris in another part of this magazine. While North Carolina, the largest fertilizer-using State in the Union, doubled her fertilizer consumption between 1921 and 1928, Mississippi increased hers five-fold and Texas seven-fold in the same time.

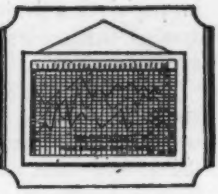
As Mr. Ferris points out, with a rapid increase in fertilizer consumption in the Southwestern States, the tendency has been to use single plant foods or combinations of two or more of these that lack proper balance. Since the extension of the use of fertilizers has usually preceded any definite information as to the real needs of the soils, it has been only natural that the plant foods that show the greatest tendency to increase size of plant growth have been the first to be introduced and used. Potash particularly was not used in the early years. The author points out some excellent instances of typical practices, but subsequent experimental work, as that conducted at Holly Springs Experiment Station, Mississippi, has shown remarkable increases for potash when added to other fertilizer elements. In later years this lack of potash has manifested itself in the appearance of rust, wilt, and leaf diseases of cotton generally, to such an extent that cotton growing in some sections was unprofitable.

This all goes to show that in the long run the agronomic facts will assert themselves in spite of any other influences. There is no way of escaping the facts over a period of years. Therefore, it is the soundest policy to make every honest and determined effort to try and find all the facts in the first place.

Many times farmers are losing most of the profit on certain fields because they fail to spend a few dollars on commercial fertilizers and make effective use of their barnyard manure. A fertilizer experiment on a small portion of the farm will be an inexpensive aid in determining fertilizer needs.

—The Extension Service News—State College of Washington.

AGRICULTURAL DEVELOPMENTS



By L. C. Farle

PURCHASES FARM

A 160-acre farm in the eastern panhandle of West Virginia was recently purchased by the State Agricultural Experiment station of West Virginia for experimental work chiefly on fruits. Lying in the heart of the important fruit and general farming section of the Eastern Panhandle, it will be of particular service in the upbuilding of that section, but much of the work will also have State-wide interest and value, according to F. D. Fromme, director of the station. Its establishment is a step in the fulfilment of the policy of carrying the University of West Virginia to the people of that State.

OVER 2,450 EXPERIMENTS

An indication of the range and extent of applied agricultural research carried out by the Experimental farms and stations of the Canadian Government Department of Agriculture throughout Canada is given in a recent official report. This report states that when it was issued there were 2,453 active experimental projects in operation, ranging in application from Agrostology to Tobacco. Horticulture heads the list with a total of 641 active experimental projects; followed by animal husbandry with 421; botany, 295; field husbandry, 282; poultry husbandry, 168; agrostology, 149; cereals, 124; chemistry, 105; illustration stations, 76; tobacco, 69; bees, 63; and pathology, 25. The benefit of this research work is enjoyed by the general public in a variety of ways.

Some of the greatest contributions to agriculture have been made by the Canadian Government Experimental Farms. At the Central farm at Ottawa Marquis Wheat was developed, a variety that extended the wheat growing area to a northerly latitude that 25 years ago was thought to be impossible. More recently the same farm introduced Garnet Wheat, which can be grown successfully farther north than Marquis. Still another variety, Reward, also a development of the Canadian Government plant breeders at Ottawa, may ultimately eclipse Marquis and Garnet. It has only been on the market three years, yet last December, Joseph H. Smith, Wolf Creek, Alberta, won the world's wheat championship at the International Grain and Hay Show, Chicago, with a sample of Reward.

TRADE ON MAIN STREET

American hamlets and small villages may be destined for the discard, but towns of from 1,000 to 10,000 population are doing more business than ever, in the opinion of Dr. C. J. Galpin, Bureau of Agricultural Economics, United States Department of Agriculture.

"Although the general trend," he says, "has been for farmers to shift their buying from stores at country crossroads, in hamlets, and in small villages, to larger retail trading centers, the shift in farmer buying to towns ranging from 1,000 to 10,000

in population is increasing the trade area of these towns and increasing the trade."

Dr. Galpin gives it as his opinion that the decline of the hamlet and small village is the result both of a decreasing farm population and of the higher standard of farm living in recent years. He said that although the farm population has decreased by 4,000,000 persons since 1920, the gross cash income from agriculture of the 27,000,000 of farm population today is the same—$10,000,000,000 a year—as that of the 31,000,000 of farm people 10 years ago.

CANADA'S AGRICULTURAL WEALTH

The gross agricultural wealth of Canada for 1929 is estimated at approximately $7,978,633,000. Last year the total revenue from agriculture was $1,667,218,000, of which Ontario accounted for $509,434,000; Quebec, $320,422,000; Saskatchewan, $309,308,000; Alberta, $228,589,000; Manitoba, $134,095,000; British Columbia, $55,235,000; Nova Scotia, $43,558,000; New Brunswick, $39,854,000, and Prince Edward Island, $26,723,000. The two principal items which go to make up the total of agricultural revenue are field crops, valued at $979,750,000, and dairy products with an estimated value of $290,000,000. Farm animals are third with a value of $210,437,000 and poultry and eggs fourth with a value of $109,346,000.

THE PRICE OF FARM LAND

According to the Bureau of Agricultural Economic, United States Department of Agriculture, farm real estate values as of March 1, 1930, show a decline of one per cent below the preceding year, as a Nation-wide average.

Maine, Connecticut, Wyoming, Colorado, New Mexico, and Oregon each show a small increase in values for the year. Declines are reported for all other States, notably in the Middle Atlantic, East North Central, West North Central, and South Atlantic groups.

Values in 1920 reached 170 per cent of the 1912-14 average; they were 127 per cent in 1925; 124 per cent in 1926; 119 per cent in 1927; 117 per cent in 1928; 116 per cent in 1929; and 115 per cent in 1930.

SAVE THE FERTILE ACRES!

Our national loss due to soil erosion is $200,000,000, according to estimators of the United States Department of Agriculture. Figures do not mean much to most people, but anyone interested in the welfare of American agriculture realizes the seriousness of soil erosion. A recent session of Congress appropriated $160,000 to meet the expenses of an investigation of the subject and the support of every one affected by the problem was urged. It was pointed out that it was better to save the fertile lands of the nation than to let them wash away while seeking waste lands to bring into cultivation at high cost to the taxpayers.

FERTILIZER is a good thing if used in the right place, believes Edgar Hinze, a 4-H Club boy living in the Shroeder community in Nueces county, Texas. He made a net increased profit of $8.64 per acre from a small sandy plot on which 12-4-4 commercial fertilizer had been applied at the rate of 300 pounds to the acre. But on a near-by black land plot an application of 200 pounds of a 12-2-2 fertilizer gave no increase. This is in line with experience throughout the Blackland Belt of Texas, but this boy has furnished a good illustration of the need for fertilizer in the sandy soils commonly found in and adjacent to the Blacklands.—*W. H. Darrow, Extension Editor, A. and M. College of Texas.*

Foreign and International Agriculture

In Old Macedonia

By Frank W. Ober

Honorary Secretary, Agricultural Committee, Near East Foundation

LIKE American county agents, six Greek speaking farm production instructors in old Macedonia are building better agriculture. On the battlefields of the centuries where Philip, Alexander, Caesar, and the Turks fought and Paul preached, these six "county agents" are leading in a battle for bread and more bread, healthful living, and a fuller life for a downtrodden people.

Macedonia is receptive to constructive ideas on agriculture. Some 133,000 refugee families are rebeginning on the reclaimed battlefields with farms of from 5 to 15 acres given each family on easy terms. Already 1,250,000 acres are settled. The Government has supplied 75,000 plows, and $43,000 has been spent in seed. Each family has been given a cow, sheep, and a few tools to start anew. More than 1,650 new villages have been created and as many old reoccupied. Some 42,000 mud-brick, tile-roofed houses, costing from $250 to $350 each, have been built.

The refugees are of good mental, physical, and moral stuff. A church, school house, good roads, and a cem-

Here an instructor is discussing with farmers the use of commercial fertilizers for tobacco. Macedonia is famous for its production of the best Turkish tobacco, a cash crop upon which the refugees rely for their livelihood

etery are their first demands. Deportation, starvation, despair are behind them and hardship, struggle, hope are ahead. Government agricultural experiment stations and model farms have been established.

A great need for American agricultural teaching on the Smith-Lever plan, 4-H Clubs, etc. is felt. The Near East Foundation is doing a remarkable work in projecting evening farm-extension courses in 36 villages, furnishing pedigreed stock and choice poultry for two experiment stations, and also in furnishing able leaders to supervise agricultural teaching.

A Greek speaking leader teaches and supervises work in six villages. The mayor, school teacher and priest comprise a local committee. There is no costly equipment, the instruction being given in school buildings and fields.

There is a nucleus of former Near East Relief orphanage boys of character and capacity in each village. These become dependable leaders in health, recreation, and morale, and in a true sense they are "Soldiers of the Soil." The year's salary and expenses of a leader of six villages average $1,000 and it is figured that every $1,000 thus invested should add $2,000 in increased food production besides better homes, health, goodwill, and well-being.

The Agents Report

A recent report of the six Macedonia "county agents" is an enlightening picture.

1. Demosthenes Economou in the Kilkis Area, before starting his second group, made definite arrangements for three experiment projects *for better farm methods* in each village. A frontier garrison of soldiers (80 per cent. farm born) raised $100 worth of vegetables and attended farm talks given by him last season.

2. Dionissios Tzoghas has begun work on *school gardens* near Berea (spoken of by St. Paul) in all six of his villages, and is to assist the people of Soubasa in planting 25 acres of fruit trees which they themselves will buy. The secretary of the village very aptly stated they would be a good investment for the younger generation of the village.

3. Georgios Papadopoulos has made a name for himself in using his army veterinary training to cure animals in his villages and is also doing an outstanding bit of work with their *village recreation and improvement work.* He conducts physical training in village schools. He and his sister are Near East Relief orphans and are real community leaders in their home town.

4. Haralambos Petropoulos has a very difficult group of villages in which to work because of location, difficulty of getting from place to place through the ever present winter mud, and the general backwardness of the people. Nevertheless, he has already contributed something toward the *uplift of the communities* by his *visiting peasant homes,* and by his readiness to share in all local activities.

5. John Loucopoulos has already helped organize a *Boys' Club* in Tcherepiani with 30 young men as members. They are pledged to attend his meetings, remain away from coffee houses, and to improve themselves morally, physically, and mentally. It is similar to a *local Y. M. C. A.* They have rented a room to be used for meetings and study and have asked for our cooperation with athletic supplies and suitable books. The village priest and school teacher are active with him.

6. Haralambos Zylamoughlou has done the most outstanding piece of work in giving *talks to children* in the village schools on *nature study.* He seems destined to be a most worthy member of our staff of teachers. The priests of the villages, who are also farmers, attend the evening lectures on agriculture.

That soil fertility has already been accorded a place of importance in the

(*Turn to page* 54)

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Soils, Fertilizers, Economics, Crops, Crop Diseases, and Insects. A file of this department of BETTER CROPS WITH PLANT FOOD would provide a complete index covering all publications from these sources on the particular subjects named.

Fertilizers

Apple growers the country over have had sad experiences from the ill effects of one-sided fertilization on the health and bearing quality of their fruit trees. That apple trees, not unlike other farm crops, remove large quantities of the essential plant food elements which must be replaced by direct application of these elements in commercial fertilizers, is convincingly shown in Bulletin 269 of the Virginia Agricultural Experiment Station.

Summarizing the results of long-time orchard experiments in Virginia, supplemented by statistical analysis of data recorded by the horticultural authorities in New York, Pennsylvania, and West Virginia, Dr. F. W. Hoffman, the author, makes the following comments:

Significant gains in trunk circumferences and yields for cultivated orchards treated with nitrogen, phosphoric acid, and potash, are recorded. Most pronounced gains in yield show up in general for nitrogen alone, but the highest gains show up for a combination of the three essential plant food elements in the cultivated apple orchards of the limestone belt.

He further states that for higher yields and for better quality fruit, applications of phosphoric acid and potash in a correct balance with nitrogen must not be overlooked, even though nitrogen may show the most pronounced gains.

Of significance is his statement that from the standpoint of maintaining at least a reserve for fruit needs, it should be profitable to restore at least the amounts of these essential elements as have been shown to be removed in the picked fruit.

Regarding ratio of the essential elements, it is pointed out that although a 7-2-5 ratio is suggested for minimum needs, it may be desirable also to provide against the elements tied up in the wood, for removal in pruned wood, and for special cover crop needs. To provide for these additional needs, a 7-6-5 analysis for soils not planted to legumes or low in nitrogen, and a 4-8-5 analysis for those planted to legumes, or well supplied with nitrogen, are suggested.

It would appear that this new concept of orchard fertilization is far more logical than any one-sided system that might be in vogue.

This bulletin should prove of immense value to practical orchardists and investigators.

Soils

Failure to test farm soils for acidity to determine lime requirement for optimum crop growth is costing American farmers millions of dollars in poor crop yields and money wasted by guessing at the amount of lime needed. In an effort to simplify soil testing and to effect a saving of money, the Illinois Agricultural Experiment Station has published Circular No. 346, the title of which is "Test Your Soil For Acidity." C. M. Linsley and F. C. Bauer are the authors. This bulletin should prove immensely helpful to farmers who have

not made the grade by the "Guessing Route."

"Liming Massachusetts Soils," Agr. Ext. Serv., Amherst, Mass., Ext. Leaflet 134, Jan., 1930, A. B. Beaumont.

"Soil Survey of The Oroville, Area, California," U. S. D. A., Washington, D. C., No. 4, Series 1926, E. J. Carpenter, A. T. Strahorn, T. W. Glassey, and R. Earle Storie.

"Soil Survey of Carroll County, Iowa," U. S. D. A., Washington, D. C., No. 5, Series 1926, A. M. O'Neal and R. E. Devereux.

"Soil Survey of Chickasaw County, Iowa," U. S. D. A., Washington, D. C., No. 1, Series 1927, C. L. Orrben and F. R. Lesh.

"Soil Survey of Warren County, Iowa," U. S. D. A., Washington, D. C., No. 12, Series 1925, A. M. O'Neil and R. E. Devereux.

"Soil Survey of Nuckolls County, Nebraska, U. S. D. A., Washington, D. C., No. 17, Series 1925, Louis A. Wolfanger, R. D. Wood, and A. N. Huddleston.

"Soil Survey of Hyde County, South Dakota," U. S. D. A., Washington, D. C., No. 18, Series 1925, J. A. Machlis and B. H. Williams.

"Soil Survey of Willacy County, Texas," U. S. D. A., Washington, D. C., No. 3, Series 1926, H. W. Hawker, and C. S. Simmons.

"Soil Survey of Calumet County, Wisconsin," U. S. D. A., Washington, D. C., No. 16, Series 1925, W. J. Geib, A. H. Meyer, J. A. Chucka, and H. H. Hull.

Crops

"Intensive Grassland Management" is the title of a new Massachusetts bulletin, No. 262, in which the authors, R. C. Foley, E. J. Montague, and C. H. Parsons, record the results of a two-year demonstration on pasture improvement. In spite of two extreme seasons, the first wet, the second dry, excellent results were obtained from the use of concentrated fertilizers. The grazing season was lengthened and the carrying capacity of the pasture increased, thus lessening the amount of barn feeding necessary. The bulletin contains valuable information for any livestock farmer who would lessen his production costs.

An important new bulletin which came into circulation during the month is Bulletin 500, "Legumes as a Source of Available Nitrogen in Crop Rotations," by Dr. T. L. Lyon of Cornell University. The experiments discussed in the bulletin were undertaken for the purpose of studying the effect of certain kinds of legumes and their place in the rotation on the yields of all the crops in a number of five-year rotations. The experiments in which alfalfa was followed by cereals through a period of several years, and in which timothy was followed by the same crops, showed that, while alfalfa activated the soil nitrogen and thus caused larger yields of the cereals immediately following the legume, yet the activity wore off as succeeding crops were grown, and there was a tendency for yields following the alfalfa and the timothy to become equal during the course of several years. The experiments suggest the advisability of repeating the use of a legume in the crop rotation at sufficiently short intervals to prevent the nitrogen from losing its activity at any time. The yield of alfalfa hay averaged three-fourths of a ton more to the acre annually where a fertilizer consisting of superphosphate and muriate of potash was applied, than where none was used. Not only was the yield of dry matter increased by fertilizing, but the actual quantity of nitrogen produced was considerably augmented, although the percentage of nitrogen in the crop was not larger in the fertilized than in the unfertilized alfalfa. These are a few of the important conclusions reached by Dr. Lyon. Agriculturists interested in the place of legumes in rotations will want this eminent authority's new bulletin.

"Prune Culture in California," Agr. Ext. Serv., Berkeley, Calif., Cir. 41, March, 1930, A. H. Hendrickson.

"Peach Culture in California," Agr. Ext. Serv., Berkeley, Calif., Cir. 42, March, 1930, E. L. Overholser and W. P. Duruz.

"Olive Thinning and Other Means of Increasing Size of Olives," Agr. Exp. Sta., Berkeley, Calif., Bul. 490, April, 1930, Harry E. Drobish.

"Fifty Years' Index 1877-1927," Agr. Exp. Sta., Storrs, Conn., Bul. 309, Dec., 1929, E. H. Jenkins.

"Herbaceous Perennials for Florida," Agr. Exp. Sta., Gainesville, Fla., Bul. 57, Jan., 1930, J. V. Watkins.

"Vegetable Crops of Florida," State Home

Demonstration Dept., Tallahassee, Fla., Bul. 58, March, 1930, A. P. Spencer.

"A Study of the Root Systems of Some Important Sod-forming Grasses," Agr. Exp. Sta., Gainesville, Fla., Bul. 211, Feb., 1930, A. S. Laird.

"Results of the 1929 More and Better Cotton Per Acre Contest," Ga. State College of Agr., Athens, Ga., Vol. XVIII, Bul. 383, Feb., 1930, Edison C. Westbrook.

"A Comparison of the Transpiration Rates of Twenty-one Deciduous Fruit Species," Agr. Exp. Sta., Urbana, Ill., Bul. 341, Feb., 1930, Victor W. Kelley.

"The Inheritance of Germless Seeds in Maize," Agr. Exp. Sta., Ames, Ia., Res. Bul. 121, Feb., 1930, John B. Wentz.

"Annual Report of Extension Work," La. State University, Baton Rouge, Ext. Cir. 139, March, 1930, W. B. Mercier.

"American Potato Journal," The Potato Association of America, Lansing, Mich., Vol. VII, No. 4, April, 1930.

"Winter Wheat Varieties—Importance and Culture," Agr. Ext. Div., Univ. of Minn., St. Paul, Spec. Bul. 127, Oct., 1929., R. E. Hodgson and H. K. Hayes.

"Report of the South Mississippi Branch Experiment Station," Agr. Exp. Sta., A. & M. College, Miss., Bul. 274, Dec., 1929, W. R. Perkins, W. S. Anderson, and W. W. Welborne.

"Blackberries for New Hampshire," Univ. of N. H. Ext. Serv., Durham, N. H., Ext. Cir. 104, Dec., 1929, L. P. Latimer and H. A. Rollins.

"Agricultural Experiments—1929," Agr. Exp. Sta., Durham, N. H., Bul. 250, Feb., 1930, J. C. Kendall.

"Better Lawns," Agr. Exp. Sta., New Brunswick, N. J., Ext. Bul. 76, Jan., 1930, H. R. Cox.

"Development and Ripening of Peaches as Correlated with Physical Characteristics, Chemical Composition, and Histological Structure of the Fruit Flesh: 111. Macrochemistry," Agr. Exp. Sta., New Brunswick, N. J., Bul. 494, Feb., 1930, G. T. Nightingale, R. M. Addoms, and M. A. Blake.

"Experiments with Turf Grasses in New Jersey," Agr. Exp. Sta., New Brunswick, N. J., Bul. 497, March, 1930, Howard B. Sprague and E. E. Evaul.

"Varietal Experiments with Soybeans in New York," Agr. Exp. Sta., Ithaca, N. Y., Bul. 491, July, 1929, R. G. Wiggans.

"Pollination and Other Factors Affecting the Set of Fruit, with Special Reference to the Apple," Agr. Exp. Sta., Itahaca, N. Y., Bul. 497, Dec., 1929, L. H. MacDaniels and A. J. Heinicke.

"Paper Mulch for the Vegetable Garden," Agr. Exp. Sta., Wooster, O., Bul. 447, March, 1930, Roy Magruder.

"Carnation Culture," Agr. Exp. Sta., Wooster, O., Bul. 449, March, 1930, W. W. Wiggin.

"Better Pastures for South Carolina," Agr. Exp. Sta., Clemson College, S. C., Cir. 67, Mar., 1925, Revised Jan., 1930, S. L. Jeffords.

"Vegetable Gardening," Agr. Exp. Sta., Clemson College, S. C., Bul. 72, Feb., 1926, Revised 1930, C. C. Newman.

"Annual Report of The South Dakota Agricultural Experiment Station for Fiscal Year Ending June 30, 1929," S. D. State College, Brookings, S. D.

"The Effects of Various Legumes on the Yield of Corn," Agr. Exp. Sta., Knoxville, Tenn., Bul. 142, Feb., 1930, C. A. Mooers.

"Lantern Slides and Film Strips of the United States Department of Agriculture," U. S. D. A., Washington, D. C., Misc. Pub. 72, March, 1930.

"The Wonderful Variety of Pomegranate: Composition, Commercial Maturity, and Byproducts," U. S. D. A., Washington, D. C., Cir. 98, Jan., 1930, E. M. Chace, C. G. Church, and H. D. Poore.

"The Production of Lily Bulbs," U. S. D. A., Washington, D. C., Cir. 102, Feb., 1930, David Griffiths.

"Flax Cropping in Mixture with Wheat, Oats, and Barley," U. S. D. A., Washington, D. C., Tech. Bul. 133, Sept., 1929, A. C. Arny, T. E. Stoa, Clyde McKee, and A. C. Dillman.

"Information for Virginia Fruit Growers," Va. A. & M. College, Blacksburg, Va., Bul. 114, Jan., 1930.

"Department of Agriculture and Immigration of Virginia," Richmond, Va., Bul. 269, May, 1930.

"Soybeans for Silage and for Hay," Agr. Exp. Sta., Morgantown, W. Va., Bul. 227, Feb., 1930, T. E. Odland.

Economics

Abandonment of farm land in New York has been going on for many years. During the 45-year period, 1880-1925, there was a decrease of more than 4,500,000 acres of land in farms in this commonwealth. The reduction in land in farms was most rapid from 1920-1925. Often idle farms are sold and the new buyers waste both time and money which they should be spending on better land. In sections where some land has been abandoned, some people, especially the owners, continue to farm even though the returns are much less than on better land. The process of abandonment is a very slow and painful process. Much of this abandoned land, however, is

suitable for growing trees. The owners of such land cannot reforest because they have only a small amount of property and cannot make long-time investments. The State is in a better position to do such work. A new bulletin, No. 490, "Abandoned Farm Areas in New York," by Lawrence M. Vaughan of Cornell University, is a study of some 15 abandoned farm areas in the State of New York. In each of these areas data are presented on the livestock, machinery, real estate, condition of buildings, the people, absentee owners, utilization of the land, farm operations, taxation, and contribution of the agriculture of the area.

"Factors Influencing Living Conditions of White Owner and Tenant Farmers in Wake County," Agr. Exp. Sta., State College Station, Raleigh, N. C., Tech. Bul. 37, March, 1930, W. A. Anderson.

"Apple Varieties: Prices, Yields, and Acreages," Agr. Exp. Sta., Ithaca, N. Y., Bul. 495, Dec., 1920, G. P. Scoville and T. E. LaMont.

"Estimated Income From the Ohio Agricultural Industry," Agr. Exp. Sta., Wooster, Ohio, Bul. 450, March, 1930, V. R. Wertz.

"Questions and Answers," Federal Farm Board, Washington, D. C., Cir. 1, March, 1930.

"Agricultural Survey of Europe, Hungary," U. S. D. A., Washington, D. C., Tech. Bul. 160, Jan., 1930, Louis G. Michael.

"Taxation of Farm Property," U. S. D. A., Washington, D. C., Tech. Bul. 172, Feb., 1930, Whitney Coombs.

"Statistics of Oats, Barley, and Grain Sorghums," U. S. D. A., Washington, D. C., Sta. Bul. 29, Feb., 1930.

"Historical Study of Prices Received by Producers of Farm Products in Virginia, 1801-1927," Agr. Exp. Sta., Blacksburg, Va., Tech. Bul. 37, March, 1929, Arthur G. Peterson.

"Adjusting Agricultural Production and Distribution in the Beckley Area to Meet Home Market Demands," Agr. Exp. Sta., Morgantown, W. Va., Bul. 226, Jan., 1930, W. W. Armentrout.

"Adjusting Agricultural Production and Distribution in the Wheeling Area to Meet Home Market Demands," Agr. Exp. Sta., Morgantown, W. Va., Bul. 228, Feb., 1930, W. W. Armentrout.

Diseases and Insects

"Protecting Orchard Crops from Diseases and Insects," Agr. Exp. Sta., Ithaca, N. Y., Bul. 498, Dec., 1929, C. R. Crosby, W. D. Mills, and W. E. Blauvelt.

"Water Soluble Arsenic in Spray Material," Agr. Exp. Sta., Wooster, O., Bul. 448, March, 1930, H. C. Young.

"Tree Hoppers and Their Control in the Orchards of the Pacific Northwest," U. S. D. A., Washington, D .C., Cir. 106, March, 1930, M. A. Yothers.

What's Happening?

(*From page* 19)

But here is another thing. The cattle tick has been completely and definitely eradicated from the tidewater section of the State. Down there is a strip of land running from 20 to 60 miles back from the coast and extending the width of the State containing vast areas of good pasture land. A good purebred bull used with native cows will produce an excellent beef animal. These beef animals can and do make high gains on the native pasturage of that section. They do still better on planted pastures and there are only two months in the year when they must be brought in and fed. Think of that! Even then, the mild climate and good soil of that eastern country will permit nearly any kind of legume to be grown for hay, and so the feeding problem is simple.

So these few facts may be given to show a changing agriculture. We shall keep our king and his chief minister, but the staff will be enlarged and numerous aides are being rewarded for efficiency. Governor O. Max Gardner has brought many of these things to the attention of the general public since he has occupied his present position. His support and cooperation have been heartening to those interested in better farming.

Apple Cankers and Their Control

By T. J. Talbert

University of Missouri

CANKERS in apple trees are a constant and dangerous source of disease. This is true because the cankers persist from year to year and may in time cause the death of branches and trees. Moreover, if cankers remain in the orchard, diseases are likely to spread rapidly and the life and profitableness of the trees may be markedly reduced.

The term canker generally indicates "sores" on the trunk or limbs of apple trees. These affected portions may result in dead areas. In some cases the outer portions of the bark only are affected, while in others the disease may have penetrated to the heartwood. The casual observer distinguishes cankers by their ugly, roughened, browned, or blackened appearance. The diseased portion may be very well defined by a distinct line or crack marking the area where the diseased or dead bark has shrunken and pulled away from the adjoining healthy tissue.

A large percentage of all cankers are caused by fungi, tiny microscopic plants which do not possess the green coloring matter found in higher plants. Since the fungi lack this green coloring matter, they are unable to manufacture their own food.

1—Fire blight canker on a pear tree trunk, showing dead sunken bark.

2—Fire blight exudation teeming with blight bacteria oozing out on the bark.

As a result, fungi live upon organic matter already made available. Such plants as molds, mildew, and mushrooms are examples of common fungi and related to the fungi that cause cankers and other plant diseases.

All the cankers discussed herein are due to fungi with the exception of Fire Blight, which is a bacterial disease, and Winter Injury, which is due to cold weather. Bacteria are also plants. They have been called germs, microbes, bacilli, and micro-organisms.

The Dependent Habit of Diseases

The dependent habit of living is characteristic of both fungi and bacteria. There are, however, many dependent plants that do not belong to

Blister canker on large apple branch, showing the "nail heads" persisting after most of the bark has fallen off.

either. Such fungi as toadstools, puffballs, and mushrooms live upon decaying plant and animal materials, and are called saprophytes. Some dependent plants live upon living plants or animals, as in the case of a tree-destroying canker or fungi, and some bacteria like Fire Blight. These are called parasites, and the organism which furnishes the food material is the host. Fungi and bacteria are the dependent plants with which this discussion will deal.

In the United States there are several different kinds of cankers on apple trees. Some of the most important, however, are: Blister Canker, New York Canker, Fire Blight Canker, Frost Canker, and European Canker. In addition there is a superficial bark canker which is very common and present on not only apples but on pears and quinces. As a rule, however, it does not do material damage.

The various kinds of cankers are to most orchardists somewhat similar in appearance and in general effect on the tree. The maladies involve primarily the bark of the tree, rarely penetrating the wood to any great extent. The New York Canker and Blister Canker, however, are exceptions as both these attack the wood. In the case of the Blister Canker the disease may penetrate the limb, branch, or trunk to the heartwood very quickly after infection and remain there for several years without making notable or serious progress if the tree is vigorous and healthy.

Blister Canker

Symptoms.—Blister Canker is generally confined to the trunk and larger limbs of the apple trees. The disease enters the tree, almost without exception, through abrasions in the bark such as are made by removal of limbs. The disease so often enters through wounds that it has been termed or called a wound parasite.

Appearance.—The diseased bark is at first brown and slightly sunken and may show healthy portions of tissue scattered within the general diseased area. Later stages showing a much roughened and blackened bark are common. The bark may fall off in irregular patches exposing the wood. On the dead areas are developed the fruiting parts of the fungus, which are large and black or brown and stand out prominently. These fruiting bodies give the appearance of a blister, hence the name, Blister Canker. The blisters, or raised portions, also resemble nail heads and are known to fruit growers as "nail-head" patches. When the fruiting bodies or "nail-heads" are found, one may be sure that the trouble is Blister Canker.

New York Canker

Symptoms.—The New York Apple-tree Canker disease is found on the limbs and trunk as a canker, on the fruit as a black rot, and on the leaves as a leaf spot. This fungus disease follows frost, fire blight, and other injuries. It is also readily spread from one part of the tree to another. Since the disease is found on many wild plants and may pass from these to the apple, its control is made more difficult.

While the canker generally forms on the larger limbs and trunk, yet the smaller branches and twigs are often affected. Like Blister Canker, infection most often occurs in wounds or abrasions of the bark. The losses from this disease are usually much greater than generally believed.

Appearance.—The affected portion is at first a reddish brown color and slightly sunken. It may increase in size and become darkened after a few weeks. The disease may die out at the end of the growing season, but in severe cases the spots spread or enlarge and may extend several feet. Affected bark adheres tightly to the wood for a year or more before breaking away.

The spots on the foliage appear most abundantly with the opening of the leaves in the spring, in fact, it is one of the earliest diseases to attack the foliage. The injury on the leaf is at first a minute purplish speck, enlarging to about 1/8 of an inch in diameter and changing to a brownish color. In severe cases the leaves turn yellow and fall during the latter part of July or August.

The disease may also attack the fruit, often causing the blossom-end rot. The entrance may be made through spray injury. In severe cases the fruit may be reduced to a black mummy. When this occurs it is covered with postules, as described for the canker form of the disease.

Left: Black rot canker surrounding an injured apple twig. Right: Black rot canker on the lower part of the truck of a young tree.

Fire Blight Canker

Symptoms.—Fire Blight is a bacterial disease. The entire life of the organism is passed within the softer tissues of the bark, cambium, or new wood of the living plants. It passes the winter in hold-over cankers mainly on the pear trees, although a few varieties of apples like Jonathan, York, and Transparent may develop hold-over cankers in the spring and early summer, which afford a place for the disease to pass the winter.

In the spring the bacteria become active, multiply rapidly, and affect the adjoining healthy tissues. A sticky exudation teeming with bacteria may ooze out on the bark. This bacterial ooze is a source of infection. Raindrops may spread the disease by spattering the sticky exudation to the leaves, twigs, and branches. It may also be carried from tree to tree by insects, especially the sucking types.

Appearance.—Fire Blight causes the bark to wither and separate from the green, live tissues. The point of separation may be indicated by an open crack or line, called the line of demarcation. The sunken areas and the lines separating live and dead bark may appear as water-soaked and assume a blackish or brownish color.

Frost Canker

Symptoms.—Frost cankers are often mistaken for Fire Blight. These affections may be easily distinguished. Frost cankers are usually manifested early in the season by the injury on the trunk, in the crotches of the large branches, or at the base of the tree trunk. Winter injured trees may start into growth and later die. The foliage of such trees generally shows a uniform browning and rarely will one find the injured areas sunken and surrounded by a definite line between healthy and injured portions. Furthermore, no exudation or sticky substances ooze from the canker or injured places, as in the case of Fire Blight Canker. No water-soaked appearance is observed on the trunk or branches, and there are no blighted twigs as is true with fire blight.

Appearance.—Frost Cankers may be followed by fungi that irritate and extend the wound. The cankers form mainly on the trunk or at the crotches of the main branches. At the base or the crown of the tree similar injuries may also occur. Such injury is called collar rot, crown rot, etc. In all the above instances the injured bark becomes discolored, dead, and loosened from the tree or branch. It often sloughs off and exposes the wood.

European Canker

Symptoms.—The European Apple-tree Canker begins as a slight discoloration on the bark, and very soon the area affected is sunken. Later a marked swelling may appear just below and above the affected part. After a few months the bark may fall away and a callus be formed about the margin of the canker. The callus seems to prevent for a time the progress of the disease. It is generally penetrated, however, and the injury thus enlarged. This process of checking and later extending the injury causes the development of layers of callus on the wounds.

Appearance.—The appearance of the disease is that of several concentric rings which are folds. The canker has no doubt caused the tree to repeatedly attempt to heal over the wound and each time the fungus has, during its season of rapid growth, extended its sphere of injury.

General Canker Control

There are many differences in the organisms which cause cankers. The appearances of the cankers also differ. The development of no two is alike. The general method of treatment, however, is much the same, and the general suggestions which follow may help very materially in the control of all:

1. Cut out and burn all affected twigs and branches which can be spared. In so doing the grower may

be able to rid the orchard of the source of the disease. Make cuts from six to eight inches below the canker area, if possible, in order to be sure of eliminating all the infected parts.

2. Where the branch is too valuable to cut, or in case the canker spot is located on the main trunk, the diseased tissues should be removed about four to six inches above and below and from two to four inches on the side.

3. A thorough dormant spray, using a strong fungicide like lime-sulphur or bordeaux, is valuable if applied just as growth is starting or slightly before to coat over infected areas and to cover parts through which entrance of some of the cankers might be gained.

4. Practice the best orchard culture known for your locality. Vigorous, productive trees resist to a marked degree injury by all cankers. No two orchards are alike but all respond to good care and timely attention.

Asparagus

(*From page* 20)

plants were placed at the bottom of a plowed trench, approximately on top of the subsoil, 9 inches deep; only 1 to 1½ inches of soil covered the roots; then fine manure 1 to 2 inches deep was spread over the soil. The manure prevented soil drying, thus aiding plant shoot growth and adding some plant foods.

Heavy fertilization has been the practice each year. At first a ton of 4-8-10 was used. This has changed in late years to an 8-16-20, about 1,000 pounds per acre. All is broadcast. During the last three years all the poultry manure from 200 hens has been spread on the bed. In the poultry manure is some superphosphate, only enough to keep it dry while on the dropping boards in the henhouse. In addition the ash from six cords of hardwood burned in the home is spread on the asparagus bed amounting to approximately 350 to 400 pounds high in lime and potash. Surely there is enough fertilizer here to grow a bumper crop of tops, therefore, a most complete root system with large food storage resources. It is the large root storage that means big crops the following year. Fertilizer then is considered by the Humphries to play a very important part in root formation and storage. Ample lime has been used to insure correct soil reactions.

A little help on fertilizing, but more on keeping down the weeds and bugs is obtained by allowing young chickens, 500 to 700 to run over the bed. The bed is kept clean of weeds by these chickens aided by few cultivations. Pests are not numerous, mostly bugs which are easily controlled by spraying and later by the chickens. Rust has not arrived nor will it because the variety used is rust resistant, being Martha Washington.

Let us look at the cutting and yields. In 1923 the first growing year, of course nothing was cut. Big growth of tops and roots was obtained.

In 1924 because the bed is a closely planted, heavy fertilized type, it was cut somewhat this year. The yield obtained amounted to 830 pounds.

In 1925 the yield increased to 2,425 pounds or about 300 per cent increase over the previous year divided as follows—in April 50 pounds, in May 1,550 pounds, in June 825 pounds.

In 1926 the yield increased to 3,832 pounds or about 470 per cent over 1924 and about 40 per cent over 1925. The cutting received was di-

Totals cut A1 and sold by months and years
In pounds per acre

One acre	1924	1925	1926	1927	1928	1929	Average
April	0	50	0	4	0	0	For 2 years only 27 pounds
May	385	1550	2110	2232	2112	2532	For 6 years 1820
June	445	825	1531	2381	2410	2727	For 6 years 1720
July	0	0	191	221	853	0	For 3 years only 422
Total	830	2425	3832	4838	5375	5259	3760

See the yearly average for the 6 years—3,760 pounds. That's more than many wider spaced (old fashioned method) beds produce in their banner year.

vided thus—in May, 2,110 pounds, in June 1,531, in July 191 pounds.

In 1927 an increase of 600 per cent over 1924 was obtained, 100 per cent over 1925 and 23 per cent over 1926. The total sales were 4,838 pounds. This was harvested and sold as follows—in April 4 pounds, in May, 2,232 pounds, in June, 2,381 pounds, and in July 221 pounds.

During 1928 the yield increased about 640 per cent over the first year of cutting in 1924; about 122 per cent over 1925; 40 per cent over 1926; 11 per cent over 1927. Sales were 5,375 pounds of A No. 1 "grass." Of this yield 2,112 pounds were produced in May, 2,410 pounds in June, and 853 pounds in July.

This year, 1929 gave an increase over all of the preceding years except 1928, but because of dry weather cutting was discontinued on June 28. At the daily rate of cutting the bed if cut as long as in 1928 would have outyielded 1928 by almost 1,000 pounds. Notice in table above that the total yield for 1929 with cuttings only in May and June is almost as large as the total yield for 1928 which had cuttings in May, June, and July. The total yield for this year is 5,259 pounds, being produced 2,532 pounds in May and 2,727 pounds in June. Both of the yields are more than yields in the same month in previous years.

The results are tabulated above.

After the cutting season is over the fertilizer is applied broadcast and harrowed in. The largest, broadest, most thrifty colored foliage is strived for and obtained. In late fall, growth is killed down by frost, the bed including stalks is harrowed and left for the winter. In the spring it is shallow plowed and smooth harrowed, all level and ready for work again.

In Old Macedonia

(*From page* 44)

programs of the six instructors is evidenced by the fact that each carries with him a specially prepared satchel, containing samples of fertilizer and the usual equipment for testing soil. For ages the peoples of the Near East have been robbing the soil. They have used cow manure for fuel or let it go to waste.

Along many other lines, practical methods of teaching modern agriculture are creeping into the Near East where so much effort is being made to teach the people to make the most of what little they have.

Controlling Weeds on Muck Lands

By L. A. Dalton

Agriculturist, Lackawanna Railroad

EVER since intensive utilization of muck lands for the production of vegetables began, weeds have been a serious menace to economical returns from these lands. The soils, being very fertile, favor early germination of weed seeds and their rapid growth afterwards. To keep these weeds in check, an enormous amount of hand labor has been required. This is particularly true along the ditch banks. The ditches serve as collectors of weed seeds. They are carried here by wind and other agencies throughout the entire year.

As soon as frost is out of the ground in spring, the ditches are cleaned out and deepened in order to insure drainage. The material taken out of these ditches is placed on the banks, which later are leveled off and worked into the edges of the bed with other soil. With the first warm days, the weed seeds begin to germinate, and before the crops are planted, weeds have come up and made rapid headway. This continues throughout the growing season, unless frequently cultivated or scraped.

On a 20-acre tract of muck land there may be and often is, as much as two miles of ditches. Keeping this amount of ditches free of weeds is very expensive. They must be kept clean to prevent the weeds maturing and spreading over other parts of the farm. In addition, weeds may harbor injurious insects and diseases which attack the crops.

Some of the worst weed pests known infest these muck lands. Quack-grass, thistles, chickweed, smartwood, pigweed and many others are very common. To control these pests easily and economically is an important problem with the farmers.

A chemical compound known as calcium chlorate, tried out last summer has been found to give excellent results. It may be applied in the pow-

Above: A drainage ditch infested with weeds, which are not only an eye-sore but a dangerous source of infection.

Below: The same ditch a few weeks after spraying with calcium chlorate. Note the clean and neat appearance.

dered form by dusting on the weeds when they are wet with dew, or it may be mixed with water at the rate of one pound of the salt to one gallon of water and sprayed on. The latter method seems to be more satisfactory and economical. Six gallons of the solution will thoroughly spray 300 feet of ditch on both sides if done before the weeds have made rank growth. The ordinary knapsack type of sprayer, operated by hand, is well suited for this work.

One man can mix the solution and spray all the ditches on the average muck farm in a day. If the ditches are sprayed in early spring before the weeds are too far advanced, a second application in midsummer is all that is needed. Besides being economical, it eliminates the drudgery which the common method of scraping entails.

Tests were made on the farms of F. J. King and W. H. Bailey, Fulton, New York. Both were highly pleased with the results. Muck land farmers will do well to give this method of controlling weeds on ditch banks a thorough trial.

A 4-Year Soils Project

(*From page* 26)

fence because the cows could step over the old one.

On this kind of land George laid out his field in plots for his improvement work and raised oats. On plot No. 1 he used 132 pounds of 45 per cent phosphate, 150 pounds of muriate of potash, and two tons of lime per acre; plot No. 2 took 800 pounds of lime phosphate, 150 pounds of muriate of potash, and 2 tons of lime to the acre; plot No. 3 was made a check plot with no lime and no fertilizer; and plot No. 4 had 132 pounds of 45 per cent phosphate per acre.

Thus George had land with no fertilizer and no lime; land with just 45 per cent phosphate; some with lime, lime phosphate, and potash; and some with lime, 45 per cent phosphate, and potash.

Plot No. 1, on which lime, phosphate, and potash were used, produced 68.4 bushels of oats per acre; plot No. 2, which had 800 pounds of lime phosphate in place of 132 pounds of 45 per cent phosphate, yielded 31.3 bushels to the acre; plot No. 3, or the check plot, made 19.5 bushels per acre; and No. 4, which had 45 per cent phosphate but no lime, lime phosphate or potash, yielded 29.3 bushels per acre.

Another farm boy, in the four-year soil improvement project is Daniel Larson, student at the Barron high school. The five-acre plot we selected for the first year of the project, he says, had been cropped for 28 years and had never had any commercial fertilizer applied. We took 12 samples of the surface soil and 12 of the subsoil and sent them to the state college for testing. The tests showed that we needed 3½ tons of lime to the acre in order to correct acidity. There were only 17 pounds of available phosphorus in the surface soil per acre and 12 pounds in the subsoil.

On one plot in his field, Dan applied 300 pounds of 20 per cent phosphate per acre; on another he used 3 tons of lime; another plot received 800 pounds of lime phosphate; and still another received the combination of 200 pounds of muriate of potash, 800 pounds of lime phosphate, and 3 tons of lime. There was also, of course, a check plot on which neither lime nor fertilizer was used.

He then planted barley and his yields are as follows: on the check plot

Grandfather, father, son, and little brother all take part in the 4-year soils improvement project of George Morse, Avalon, Wisconsin.

he obtained 22.1 bushels; from the plot treated with 20 per cent phosphate, 28.6 bushels; from that on which lime alone was used, 24.7 bushels; the lime phosphate plot produced 20.8 bushels; and the lime, lime phosphate and muriate of potash yielded 35.2 bushels per acre.

His profit was $29.79, but he now knows more about the land on his home farm, its requirements, and how to build it up, than he ever knew before.

As an educational project in long-time soil improvement work, the four-year soil improvement program for farm boys is most promising. They have learned considerable about the needs of the soil on their home farms, a good deal about soil management methods, and are enthusiastic over the work.

This was the purpose of the project, to teach the boys how the land can be managed and built up so as to produce the most profitable returns, not to produce record yields. The differences in yield due to the use of various kinds of fertilizers were great enough to point the way toward desirable practices that should be followed.

Most of the data collected by the boys are fairly accurate, for they were under the close supervision of their Smith Hughes teachers and Professor Richards. The high school teachers helped lay out the plots, and helped the students harvest their samples to be sent in to the college where they were threshed and yields from each plot recorded.

Neighbors of these boys were curious as to the outcome of the work and, no doubt, learned almost as much as did the boys themselves. And although yields in actual bushels may not have been remarkable in every case, the yield in terms of the advancement of soil education was large.

STICK!

Men fail—because they *begin* something.

Men succeed—because they *finish* a definite thing.

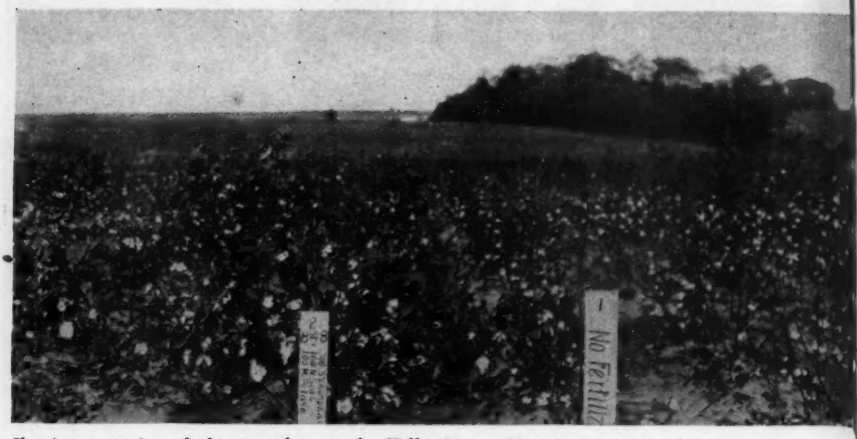
Stick—that is the first law of winning.

Mistakes may mark you back. Men may misjudge you. The halfway spirit may tempt you. The fight may tire you.

But to win—push the thing through, finish it—*STICK!*

Healthy Cotton

(*From page 6*)



Showing a portion of the test plots at the Holly Springs Experiment Station in 1929 where potash was being varied in fertilizer combinations. The check plot here made 758 lbs. of seed cotton per acre, while 600 lbs. of a 4-8-8 made 1,814 lbs.

A summary of this work as published at the end of the year showed the following increases due to varying amounts of potash in otherwise uniform fertilizer mixtures, the figures being given in value of cotton per acre over the checks after deducting the cost of the fertilizer:

600 lbs. 6-8-0 $1.66 600 lbs. 6-8-2 $25.93 600 lbs. 6-8-4 $41.47 600 lbs. 6-8-6 $47.86 600 lbs. 6-8-8 $55.24

to 900 pounds of fertilizer per acre as follows; on improved soils, 4-8-6, on thinner soils, 6-8-6. Where rust and leaf diseases are prevalent, additional potash should be added."

The Raymond Experiment Station serving the farmers of southwest Mississippi has this to say under the heading "Recommendations:" "It would appear that 600 pounds of a 6-8-4 (N-P-K) fertilizer for general conditions will give good results. Where lespedeza has preceded cotton or where cotton tends to rust, it is advisable to use 8 per cent potash in the formula. On old cotton lands, it will probably be advisable to use at least 8 per cent potash in a fertilizer formula."

The South Mississippi Experiment Station at Poplarville found that where nitrogen and phosphorus alone were used for a series of years, cotton growing later on such lands succumbed to wilt, while that on adjoining plots with potash added was practically free from this trouble. The same thing has been found to be true in numerous other instances by practical farmers working in several of the States of the Southwest.

A New Palace of Agriculture

(*From page 22*)

quoted: "No other human occupation opens so wide a field for a profitable and agreeable combination of labor with cultivated thought, as agriculture." To the right, from Washington is this: "With reference either to individual or national welfare, agriculture is of primary importance."

The whole, including the extensible building to the rear, as well as the new central building and two wings, form the world's largest housing establishment dedicated to agriculture. The Department hopes that at last all the

workers that have so long been scattered over the entire city of Washington, will never again be forced out of their quarters. This, however, was the expectation when the first two wings were constructed in 1905 and 1908, but when they were completed, the Department had so grown, that it was impossible to house everyone. Thus all workers never have, until this year, been found in one central place.

The whole building cost approximately $9,250,000. This is not very much money for the construction of such a building.

To see this new home of the Department of Agriculture for the first time, brings an exclamation of delight. It does not appear to be an office structure. It looks like a white marble temple. It is, in fact, an American temple devoted to the prosperity of agriculture and allied arts and industries.

A Bright Idea

(*From page* 23)

his truck where it accomplished an excellent job. The accompanying cut illustrates the harrow and the way it was used. Incidentally he used it successfully as a smoothing harrow on plowed land.

A number of farmers in Massachusetts this year are planning where necessary to supplement their natural pasture acreage with grazing from part of their mowing land. They believe in the principle of letting the cow take the place of the hired man in harvesting her own feed during the pasture season.

To secure maximum results they intend: (1) to fertilize with complete fertilizer to increase the yield and quality of the feed; (2) to use two or more fields as pasturage in order to rotate cattle every week or two weeks, which insures better grazing and less waste; and (3) to harrow pastures several times during the season to spread the droppings so as to secure benefit from the manure and to reduce the amount of tufts which grow up around droppings and which cattle tend to avoid and thus waste as feed.

Fertilizing Alfalfa Land

(*From page* 30)

ing $1.50 produced alfalfa worth $5.17 and a net profit of $3.67 per acre. This gave a net profit of 332 per cent on the first 12½ pounds and for the second increment of potash a net profit of 155 per cent. It should be pointed out that these good potash results were in addition to lime and phosphate. In 1929 where the potash was used in addition to lime alone the increase was only 100 pounds.

Too often the need of fertilizer or lime for alfalfa is judged by a comparison of total failure and a fair crop. We should consider in such instances as this the difference between a fair crop and a much better crop. Alfalfa is a heavy feeder of minerals particularly potash and as time passes it will doubtless be profitable to increase the applications of potash and possibly lime and prosphate on this land.

While potash has shown the largest profits on this land, it would not be safe to leave out any one of the other minerals, because in this experiment neither phosphate nor potash was profitable without the other but when they were used together they were both profitable.

Since Colonial Days

(*From page* 13)

annual production during the 40-year period was accompanied by a decrease of approximately 200,000 in acreage growing the crop. The trend in oats is very similar to that of wheat. The production increased 2,000,000 bushels while the acreage decreased 170,000.

The production of buckwheat jumped from 3,332,900 bushels in 1884 to 4,838,000 in 1924 while the acreage dropped from 228,365 to 224,380. The potato crop has increased almost 100 per cent during the past four decades while the acreage has gained only 25 per cent. Hay shows a trend similar to that of the grain crops. The production increased from 3,559,900 tons in 1884 to 3,871,100 tons in 1924 while the acreage decreased slightly.

Increasing acre yields of these crops account for the greater production on the reduced acreage. This upward trend in acre yields is due to several factors, among them being the more extensive use of high-grade fertilizers, better cultural methods, improved varieties, more effective control of insects and diseases, and the abandonment of marginal land.

	1879	1889	1899	1909	1919
Estimated Tonnage Used by Farmers	103,680	120,880	213,020	309,180	396,270
Total Tonnage Index (1879 equals 100)	100	117	205	298	382
Tons Used per Farm	.49	.57	.95	1.4	1.96
Pounds Used per Acre of Principal Field Crops	27	30	54	81	104
Weighted Index of Productivity of Acreage in Principal Field Crops (1879 equals 100)	100	91	103	110	119

The Inquiring Mind

(*From page* 16)

as a beginner in research work, he had to devise or make most of his apparatus.

In Doctor Babcock's opinion, the young, earnest searcher for the truth in science should not be baffled by lack of apparatus. He should solve his own problems, be possessed of unlimited patience, and be satisfied to plod on and on, despite stumbling, mistakes, and disappointments, with the one goal of ultimate success ever in view as an incentive. He should do so for the love of the work, and for the advancement of science and human knowledge, without an inordinate longing and seeking for personal credit, adulation, and material reward.

Personally, Doctor Babcock is not satisfied to sit supinely and dream in senile weakness of the glories of the past, his personal achievements, and the superiority of his mature experience and wisdom. He walks daily a mile or more to his office and laboratory, in fair weather and foul, and is plodding and puzzling yet, seeking

the hidden mysteries of nature. He cheerfully endures the waxing infirmities of old age, laughs merrily as of yore, imbues everyone with his courage, inspires students and coworkers alike with his enterprise and thoroughness, and is setting an example to college men the like of which we have not seen before and never expect to see again.

Doctor Babcock, with all his wisdom, is *humble* today that he knows no more and has accomplished so little.

Umm—Good Melon!

(*From page 29*)

There are few fruits or vegetables more favored than the melon in the matter of flavor. Placing a real quality melon on the market pays exceedingly well. A melon grower can sell his crop for $3.00 a basket if the buyer has confidence in his melons. An unknown grower might not find a market at 50 cents.

Quality is the most important factor in determining the price paid. First, the melon's flavor needs to be kept in the melon by keeping the vines healthy until marketing time, and then, the crop needs to be harvested and sold in such a manner as to lose none of this quality.

The final consumer should be sold only a sound, good flavored, ripe melon. Nothing will cause an overproduction any sooner than a lack of interest on the part of the final consumer. Orders are repeated promptly only when first melons please.

Keeping flavor in the melon is now possible, but only through the medium of the strictest observance of insect and disease control coupled with proper fertilizing of the melon ground and honest marketing practices. Good melons will always find a ready market.

Flavor is doubly important in disposing of large crops of melons.

A Summer Idle

(*From page* 4)

again his share of tan and his assortment of chigger bites. (I find myself rapidly building a strong case for the desk deserters.)

Take up your dog-eared copy of Stevenson and I'll prove to you on page one that a boy's summer idyl is not to be idle. Here we have it once more:

"In summer quite the other way,
I have to go to bed by day.
I have to go to bed and see
The birds still hopping in the tree,
Or hear the grown-up people's feet
Still going past me in the street.
And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play,
To have to go to bed by day?"

Before the days of Boy Scouts, every urchin had to devise his own ideals of summer idyls. Let's become reminiscent.

Somewhere perhaps among my casual readers are those who, like "Stinky" Davis, never belonged to the Little Scorpions' club. Why is it that I think first of the "secret" den we fellows had, instead of conjuring up other enjoyments of my youth in more comfortable quarters? I presume it is the old "call of the wild" that abides in every kid's make-up until he finally surrenders to stiff collars and convention.

Our "den" was shared by five of us lads in the suburbs of a Midwestern "tank" town. We dug into a gravel clay bank and boarded up the walls, leaving a narrow aperture through which we crawled in furtive fashion. We tried building a chimney, but it failed to draw. In this damp and squalid hole we kept a box of piratical perquisites to clandestine camaraderie, but the mold and mildew got the best of it every summer. Here we smoked cigarettes made of "delicious" dried corn silk and crumbly leaves from the base of mullen plants; and a few of the inventive ones tried smoking buggy whip handles with those funny holes in them. There was more than one cough in a carload those days. Finally we experimented with sweet caporals and a brand of smokes that seemed to be named for our conclaves—"sub rosa." The hard-boiled ones filched pieces of spearhead plug, almost as heavy as two-by-fours, and we tried to see who could spit the farthest against the wind.

FOR relaxation when nicotine got the best of us, our gang relied upon Street & Smith, publishers extraordinary to His Majesty, the American Boy. The news-stands today reject "nickel terrors" as far too mild for an age of saxophones and sex appeal.

We pretended that the main reason for hiding out was to peruse the smudgy pages of Liberty Boys of '76, Nick Carter and Diamond Dick. As a matter of record, however, some of our parents read stuff equally innocuous, and the dime novel really sent few boys on the primrose path. But it made our red corpuscles dance to smuggle together over those borrowed villanies, and count the scalps or feel the grip of bony fingers on the hero's larynx.

When Buffalo Bill and his rough-riders (and the champion lady wing-shot) came to our town, he found a clan of boys who had absorbed enough reference reading on his career to make a sizeable and rapturous audience. Bill carried no elephants to water, but we managed to pry the price from our parents on the plea that it was a "vivid drama of the unfolding of a continent." Strange things are done in the name of History, as well as Art and Religion. So

long did I stare at those bill-boards of Bill's that I can remember the date yet—August 22, 1901.

In fishing I have learned nothing and progressed not a whit from the days of my teens. Some of my friends revel in stories of trout fishing and are equipped with reels, flies, rods, and gadgets—of which I know not the meaning and only guess at their use. A crooked pole cut from the overhanging willows, some cheap hooks and lines, a can of night crawlers dug laboriously by lantern glow, and a faith in certan silent pools, reached by a leaky flatboat—these reflect my simple rudiments of Waltonian lore. As my imagination was never robust, you shall not be forced to take stock of piscatorial weights and measures.

We freckled fellows were boon companions of the calico-colored bass we sometmes caught, and our shiny noses were replicas of the "shiners" we strung on a stick—and threw to the tom-cats on our homeward trail. After a few experiences scaling our runty trophies on an empty stomach, most of us were content to go home and eat sardines. But what of it? We had absorbed countless vitamins from sunshine on bare heads and skinny shoulder blades, and we smelled as fishy as Jonah himself. So we had both local color and atmosphere!

THE old swimming hole, with its blood-suckers and hard knots in shirttails, is so frequently named in youthful recollections that another recital seems trite. President Hoover on his Iowa trip two years ago was presented with half a dozen swimming holes to which he was supposed to subscribe. I fear Oklahoma has lost a good bit of publicity by not being able to provide Will Rogers with that kind of a background.

Swimmng holes in my time during summer holidays were patronized more generally than the old wash-tub on Saturday nights. The difference that lies between the swimming sport of my youth and the indulgence of the present is two-fold. First, there were seldom any girls present to enjoy the limpid waters with us; and second, I now observe few people jumping around on one leg to shake the water out of their ears. It is not necessary now to sneak out and surprise a bunch of women-folks in bathing. You have to get up early to beat them off the spring-board. The old admonition for girls to "hang their clothes upon a limb and not go near the water" doesn't apply either. They leave their clothes at home and hold most of the long distance records afloat. Yes, after all, I believe the scenery *has* improved since the days of my earliest immersions.

Remember how we used to come home with our hair in slick streaks and fingers wrinkled like a washboard, trying to hatch up a yarn about falling out of a boat or something? I had a fretful aunt who was forever predicting that I would drown, and was disappointed that I didn't verify her prophecy.

BUT let's get back on dry land now and go flower hunting as of yore. We fellows sometimes hunted flowers for their own sake and to outrival others in finding the earliest specimens. However, I recall that the greatest zest for flower picking excursions came at about the time I began to wash my neck and ears voluntarily and adjust my apparel with care. When Nelly and Judith promised to come out and hunt wild flowers in May time, the old world sang a carol of spring. I went over the scenes beforehand on a personal inspection trip, so that I might know exactly the "bosky dells of pristine enchantment" that would yield those star-eyed treasures which the girls desired above rubies or pickles.

The spring beauties, anemones, shooting stars, and Dutchman's

breeches; the trilliums, the violets and the buttercups! No corporation magnate in a modern rush for gold ever had half the delight that possessed me when I piloted the squealing little feminine zealots on the search for woodland treasures. Such practical botany is indeed a litany, and seems so to this very day, when we take trowels afield to add fresh members to our wild-flower nook at home.

Flower pressing in books has gone out of date, but only yesterday I opened a well-thumbed copy of Henty that once was my favorite and found crumbling traces of a wild rose, right on the place where my English hero followed Clive to Hindustan. Thus are conquest and sentiment mingled in a boy's dreams.

ON what the English call "coolish" days we trudged around the fringes of the cattail marshes, and perhaps suddenly got a hunch to fry frogs' legs. Some of us always had matches; a fire was soon kindled; and after several attempts, we secured the French delicacy along the muddy banks and roasted the white meat to a golden brown.

One-old-cat with a tightly wound string ball, a clumsy club, and stones for bases gave us our only taste of "at-e-letics." I recall at school we called the game "promotion first," until one chap got mixed in his terminology and shouted "commotion first" which proved a better title.

June bridal parties gave us keen enjoyment, and called out our best powers of teasing talent. Rice, roses, and solemn vows were no more a part of wedding festivals than the fiendish charivari. On Hallowe'en our noise and deviltry sought no reward, but on charivari occasions the band looked forward to receive something tangible—which they sometimes did with a bridegroom's curse. When I first read the Ancient Mariner's opening lines, it dawned on me how remiss we had been not to borrow somebody's bassoon. The instrument was unknown to me, but its name sounded promising and its effect on the wedding guest seemed to put it in a class by itself.

And so I might wander on through the mazes of memory, sharing those familiar idyls of an idle boy with you —my old compatriots. But summer is upon us again and finds us sparing of our time spent in retrospection. There are weeds to cut, grass to mow, and cars to grease. You cannot linger longer to hear the tales you already know. It is not that I have grown old and mellow, even though I have flirted with the past. I have only been trying to square this old conundrum of life—the need to bring maturity to see with the eyes of youth. Yet the idle youth with his idylic existence was debtor to the father and mother who really made his hopes bear fruit. Patiently through the summers of his life they provided a haven for his weary legs and blistered feet at the end of each perfect day.

Father seldom grumbled at buying four or five pairs of shoes a season. From his slender store he somehow found the price, grinning at me with his usual come-back: "Better to buy shoes than pay the doctor." Dirty shirts and empty cooky jars, muddy floors and holey socks were accepted benignly by Mother as a duty and a privilege.

SO in remembrance of the idyls of those idle days we former lads enjoyed, let's wind up with a prayer I found in a children's book. It is fittingly dedicated to Father and Mother Away from Home. To their devoted friendship I submit it:

"Keep them safe and bring them home;
Make me good while they are gone
So I may meet them when they come
With a shining face."

JUST RIGHT

A negro porter was given a bottle of moonshine by a traveling salesman. After taking a shot of the stuff the negro fell into convulsions of coughing. The traveling salesman asked him how it was.

"Jest right," the negro replied.

"What do you mean, just right?" asked the salesman.

"Well, if it was any worse it would 'a' killed me," answered the negro, "and if it was any better you wouldn't 'a' given it to me."—*Splinters.*

After walking out with Jean for some months Sandy ventured to propose to her, and was accepted. This great fact being reported to Jean's mother, she felt it her duty to call upon the prospective bridegroom in order to discover something about his financial condition.

Being curtly questioned whether he was in a position to keep a wife, Sandy confidently replied in the affirmative, placing the matter beyond all doubt by volunteering this information: "There's hardly a mornin' but a' leave some o' ma parritch; in fact, if a' dinna get a wife soon a' maun get another pig."

THE BRUTE!

Smart Alec (getting on bus): "Morning, Noah, is your old ark full?"

Driver: "Nope. Not one jackass, so far. Come on in."

HISTORY NOTE

The school board visited the school the other day and, of course, the principal put his pupils through their paces for the benefit of said austere board.

"Henry," he asked, turning to the boy, "who signed the Magna Carta?"

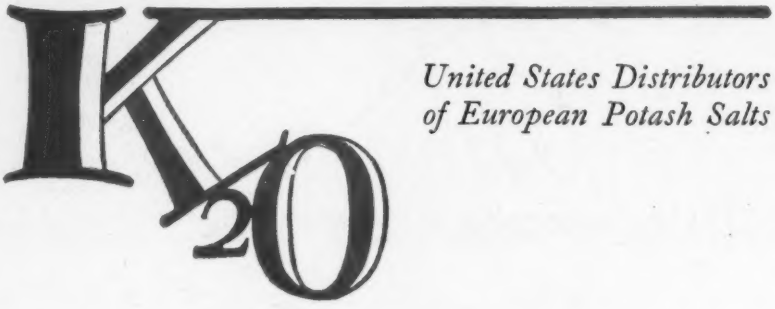
"Please, sir, twasn't me," whimpered Henry.

The teacher, in disgust, told the boy to sit down; but old Jed Smith, chairman of the tobacco-chewing board, was not satisfied. After a well-directed aim at the stove, he said: "Call back that there boy. I don't like his manner. I believe he did do it."

If you are planning an auto tour this year, get a large road map. It will tell you everything you want to know, except how to fold it up again. —*Life.*

It was necessary for taxation purposes to decide on which side of the Canadian and United States border a farm which an elderly lady had just purchased actually lay. Surveyors finally announced that the farm was just on the United States side of the border. The lady smiled with relief. "I am so glad to know that," she said, "I've heard that the winters in Canada are often terribly severe."

"Imagine my embarrassment," said Aunt Emma, "when, according to my usual custom, I looked under the bed before retiring. I had forgotten I was in an upper berth."



United States Distributors of European Potash Salts

Muriate of Potash

80-85% KCl

Sulphate of Potash

90-95% K_2SO_4

Sulphate of Potash-Magnesia

48-53% K_2SO_4

Manure Salts

30% K_2O

High Grade Kainit

20% K_2O

Kainit

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